MARCH 2, 1953

NEWS ISSUE

Electrical World

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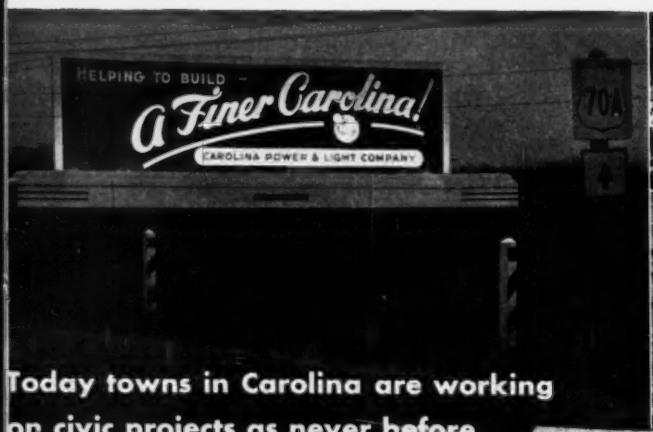
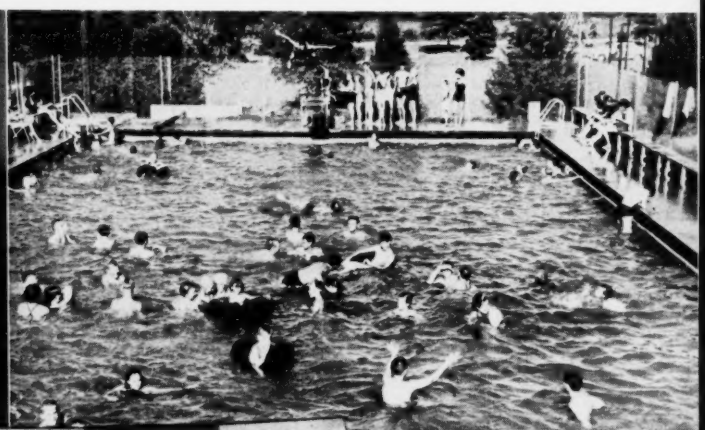


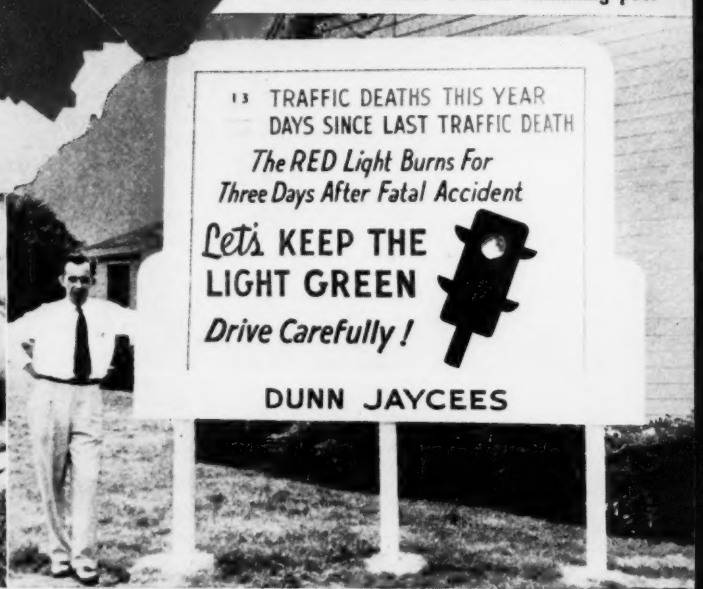
Today towns in Carolina are working on civic projects as never before.

Reason? See Page 16



Signs along highways plugged campaign

Latta sold stock to build swimming pool



Goldsboro is making itself a city of dogwood and judas trees

Dunn is trying to become the safest town in North Carolina

Rates and Research Go Together . . . Page 32

The Suburbs Grow and Grow . . . Page 50

Consistent MPA supporter, Connecticut Light and Power, has nearly every program. Here Vice-Pres. Robert G. Ely and Industrial Sales Manager Howard W. Memmott discuss new uses for the Motor Selection and Application Course.

Is your utility putting MPA to work in

EXPANDING THE USE OF ELECTRIC POWER

"Freedom and Power" wins award: Certificate for outstanding film achievement is presented by Gardner Cowles (left), editor of Look magazine, to J. Stanford Smith, Chairman, MPA Committee.

More than 100 of the nation's leading electric utilities are now using General Electric's More Power to America programs as vital components of their power sales and community development activities.

Specifically designed for the industry, these packaged promotional programs represent the co-operative best thinking of electrical and machinery manufacturers, application and consulting engineers.

Each of the 27 programs dramatically portrays the latest in electrical ideas ranging from Materials Handling to Sewage Treatment.

Utilities of all sizes are placing increasing emphasis on MPA's creative, mass-selling methods. Many purchase every program—with nearly 2000 kits now in use. To learn how MPA can help stimulate your sales program contact your Apparatus Sales office or write for MPA catalog GEA-4938. General Electric Co., Schenectady 5, N. Y.

1878 75 1953 YEARS OF ELECTRICAL PROGRESS

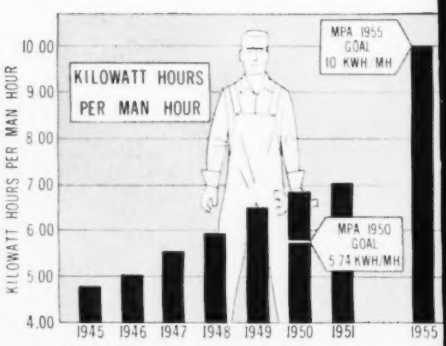
301-218

More Power to America

GENERAL ELECTRIC

One of the most spectacular MPA promotions was the "More Power to America" Special Train. Featuring over 2000 electrical ideas, train visited 163 cities. It was inspected by 259,733 people.

Industrial Productivity Forums are an important, co-operative MPA activity. Fred Allen and Clarence Gregg of New York Central inspect an exhibit with Ralph Wagner of Niagara Mohawk Power Co.

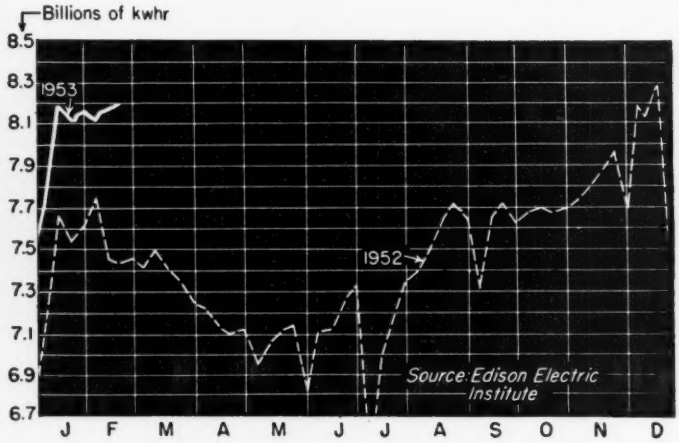


More kilowatt-hours per man-hour has been consistent goal of MPA. Results have so far exceeded expectations. Goal for 1955 is 10 kw-hr per manhour—almost double the figure set for 1950.

VOLUME 139, NO. 9

March 2, 1953

Electrical World



Output Week Ended Feb. 21—8,196,186,000 Kwhr

Per Cent Change From Previous Year

	Total US	New Eng.	Mid. Atlan.	Cent. Ind.	West Cent.	South-east	South Cent.	Rocky Mount.	Pacific NW	Pacific SW
Feb. 21	+9.9	+13.2	+7.3	+10.9	+10.3	+13.2	+3.7	+9.6	+5.4	+11.7
Feb. 14	+9.5	+8.7	+7.0	+10.6	+10.0	+14.0	+5.3	+9.2	+5.1	+9.4
Feb. 7	+9.0	+10.4	+7.7	+9.7	+9.1	+11.4	+3.7	+10.1	+5.2	+10.9

Electric Power Statistics

		Latest Month	Preceding Month	Year Ago
Peak Load (Million Kw)	Dec.	75.5	72.8	70.4
Capacity (Million Kw)	Dec.	82.05	80.91	75.54
Production (Billion Kwhr)	Dec.	36.45	33.75	33.14
Hydro		8.22	6.52	9.1[illegible]
Fuel		28.23	27.23	24.04
Fuel Consumption				
Coal (Million Tons)	Dec.	10.72	9.93	9.64
Oil (Million Barrels)		8.52	7.75	6.29
Gas (Billion Cu Ft)		60.54	69.94	52.4[illegible]
Sales (Billion Kwhr)	Nov.	30.08	30.15	27.92
Residential		8.16	7.72	7.37
Commercial		5.01	5.09	4.70
Industrial		14.91	15.16	13.89
Other		2.01	2.17	1.97
Net Income Class A & B Companies ($ Million)	Nov.	79.81**	64.86**	69.92
Estimated Dec. '53 Peak (Million Kw)	Nov.	87.3	87.2	88.3
Kwhr per Residential Customer (12 Month Average)	Nov.	2,155	2,143	1,988
Revenue per Kwhr Residential Service (12 Month Average)	Nov.	2.77¢	2.77¢	2.82¢
Canadian Production (Billion Kwhr)	Dec.	5.54	5.22	5.11

Business Statistics

FRB Industrial Production Index†††	Jan.	232*	233	216
Gross National Product Annual Rate ($ Billion)	3rdQtr.	343.4	342.6	337.1
E. W. 5 Industry Production Index	Jan.	130.0*	129.8**	124.4
ENR Construction Cost Index††	Jan.	123.1	123.2	114.8
BLS Consumer's Price Index	Dec.	190.7	191.1	189.1
NEMA Insulation Materials Sales Index†	Dec.	655	579	466
NEMA Electric Appliance Sales Index†	Dec.	268	251	218
NEMA Household Refrig. Sales Index†	Dec.	147	152	115

*Preliminary **Revised †1936=100 ††1949=100 †††Unadjusted

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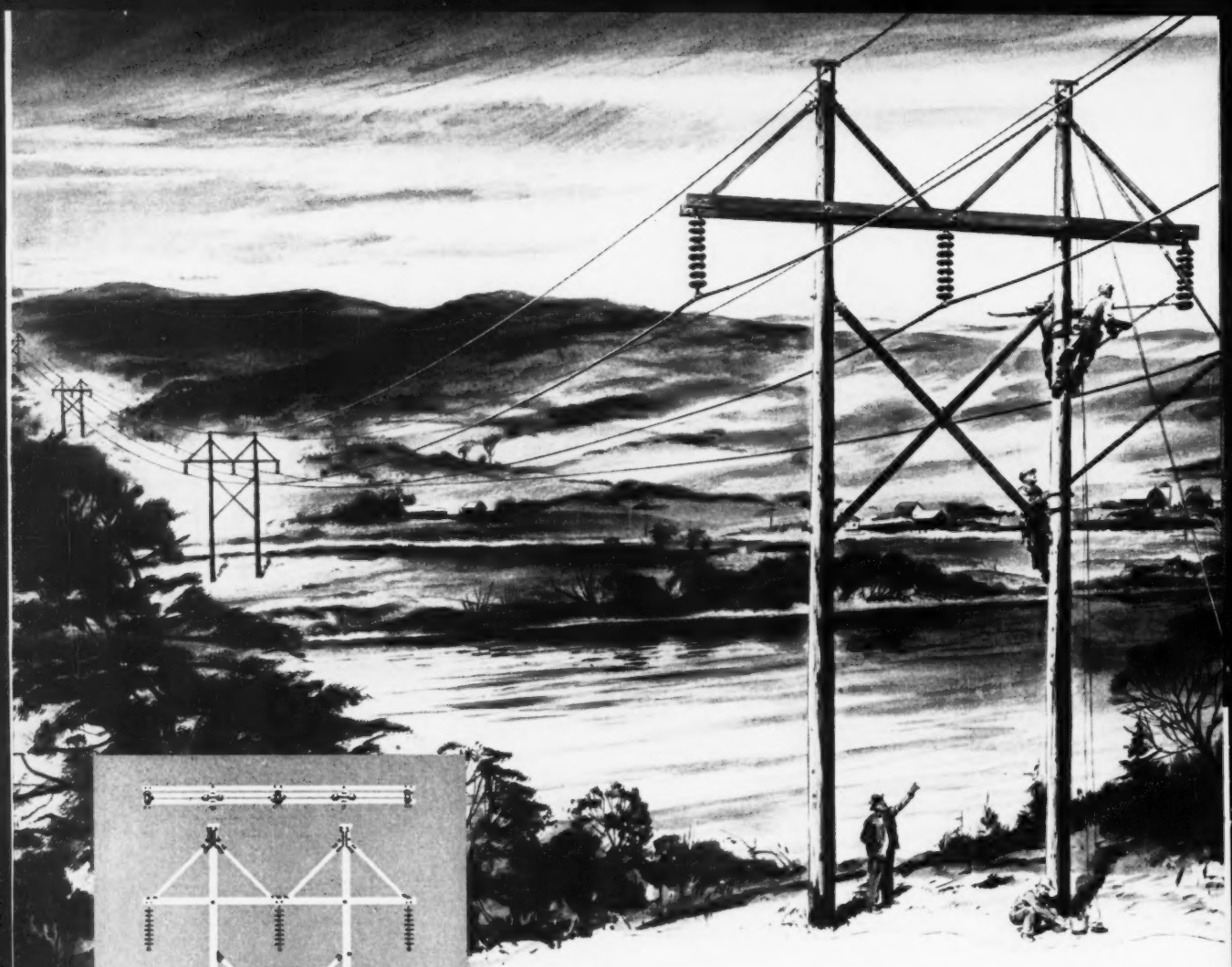

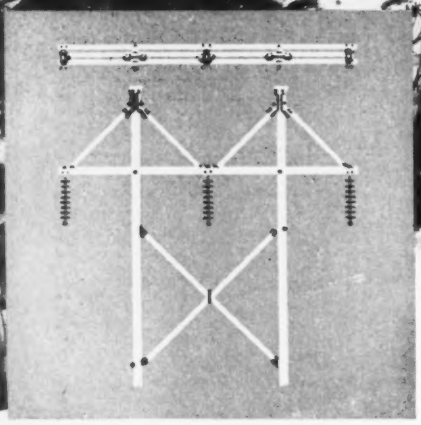

Type No. 702 —
Tangent Structure with braces . . .
for voltages 69 to 154 KV*

LIST OF MATERIAL

Quantity	Description
2	Crossarm
3	Steel spacer w/mounting bolts
2	Stud bolt 7/8" w/washer nuts and locknuts
1	Bent stud bolt 7/8" x 8" w/2 sq. nuts
2	Bent bolt 7/8" x 5 1/2" w/sq. nut
4	Vee Brace 3 3/8" x 4 3/8" cross section
1 set	Cross brace w/fittings, clamp, 7/8" pole bolts, curved washers
2	Static wire support
4	Machine bolt 3/4" w/locknuts
2	Clevis
2	Suspension clamp for static wire
as req'd	Suspension insulators & fittings

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THE ELECTRICAL WEEK

The Issue's News Highlights—FPC staff gives its blessing to New York Power Authority's plan for the St. Lawrence, clearing the way for an early decision by the commission on the authority's request for a license.

Arkansas Supreme Court rules that a super cooperative in the state cannot lease its generating facilities to Southwestern Power Administration.

Willard W. Gatchell, FPC legal staffer, gets Governor Dewey's backing for membership on the commission.

Off the Washington Wire—SEC Chairman Donald C. Cook resigns, leaving the five-member commission with two vacancies . . . As a further step toward decontrol, electric utilities may now purchase materials without Depa allotments, or without having material charged to allotments already granted. However, utilities will have to get this allotment-free material without assistance from Depa.

Six-man Senate subcommittee has been appointed to study proposal for joint U. S.-Canadian construction Seaway side of St. Lawrence project.

FPC hearings have been postponed until April 28 on the application of Big Horn Canyon Irrigation & Power Co for a preliminary permit for a hydro project on the Big Horn River in Wyoming and Montana.

At least two studies are being carried on with a view to reorganizing the Interior Department. House Appropriations Committee last week began hearings on funds for the Interior power agencies. Secretary Douglas McKay was the first witness.

Increased power rates will be discussed at a "customers" meeting called by Bonneville Power Administration for March 10 at Seattle, Wash.

Hoping to carry on merger negotiations proposed by Washington Water Power, Puget Sound P & L's Pres Frank McLaughlin extends expiration date of PUD's purchase agreement to July 31. A letter by a "stockholders committee for Puget Sound P & L," headed by Frank Currie, New York attorney, says, "Unless some progress in the merger negotiations has been made" by March 2, "it may become necessary for the committee to solicit proxies for the election of a more cooperative management."

Georgia Electric Membership Corp asks Interior Secretary to approve sale of power produced at Clark Hill hydro plant to GEMC for distribution in Georgia. State Sen Walter Harrison of Millen, GEMC manager, says, "We feel sure that Georgia Power Co will work with us on this important state development."

Oklahoma G&E employees vote 167-to-53 against having the International Union of Operating Engineers, AFL, represent them as bargaining agent.

Big Springs Power Co has been merged, effective the first of the year, with Telluride Power, according to Paul P. Ashworth, an officer of both companies.

Harold Gove, engineer for Union Electric Co of Missouri, tells American Institute of Mining & Metallurgical Engineers in St. Louis that commercial production of electric power from atomic energy is at least 10 years away. He based his prediction in part on the fact it took a long time to make practical use of the gas turbine after its principle became known. Still unsolved, he says, is whether nuclear power production can compete successfully with other fuels.

Philadelphia Electric asks PUC approval to abandon steam heat service in Coatsville. Hearing set for March 23.

New Brunswick Electric Power Commission and IBEW, AFL, get government approval of a labor agreement, first of its kind in history, involving New Brunswick government employees. Pact specifies a union shop for certain employees, a check-off system for collecting union dues, an eight-hour day, and a five-day week.

At an Interior Department hearing held at Boulder City last week on the controversy over whether Nevada or City of Los Angeles should own Boulder Dam generator N-8, Gov C. H. Russell, chairman of Nevada Colorado River Commission, said "the state's position is unchanged. We have a definite need for the generator and believe we can establish its importance to the state to the satisfaction of the Secretary" (see page 9) Decision is expected soon from the Secretary of Interior.

Thomasville, Ga., citizens will vote on March 3 on proposal to issue $2,250,000 self-liquidating certificates to build a new electric plant to supplement the 47-year power plant now operated by the municipality.

Rates—Douglas County PUD, Bridgeport, Wash., consolidates power rates. This will save district users $15,000 annually . . . Kansas G & E withdraws application for 6% increase in rates from State Corporation Commission . . . Village of Penn Yan gets New York PSC approval to put in a separately metered controlled off-peak rate to be available to residential customers of its municipal system . . . Pennsylvania PUC suspends until Sept. 1 a $4,787,000 a year rate increase proposed by Duquesne Light Co . . . Indiana PSC cuts rates in Anderson, Ind., more than 28%. City had requested this action a year ago after abandoning a plan to improve the municipal plant and finance it from higher rates.

Stockholder subscriptions—Southwestern Public Service stockholders subscribed for 270,505 common shares of 283,462 shares offered on 1-for-12 basis at $21.50 a share; balance taken by stockholders under over subscription privileges . . . Louisville G&E stockholders subscribed for 180,039 common shares of 200,000 shares offered on 1-for-7 basis at $36.50 a share; balance taken by stockholders under oversubscription privileges.

Obituaries—Allan S. Haywood, CIO executive vice president and an organizer of Utility Workers Union, died at Wilkes Barre, Pa. . . . Guy W. Faller, former president of Public Service of Colorado, died in Mesa, Ariz.

FPC Staff Backs New York Bid

Power Authority's application to build St. Lawrence project with Canada may now go to commission for decision

Staff of the Federal Power Commission, as expected, has approved the application of the Power Authority of the State of New York to build and operate the proposed St. Lawrence Power Project.

The development came a few days previous to oral argument on the application before FPC examiner Glen R. Law last week. Normal procedure following the argument is for the examiner to file his decision, subject to later review by the commission. However, there was a chance that this intermediate decision would be waived in favor of an immediate showdown before the commission itself.

Strong Support . . . Both the New York Power Authority and the Canadian Government have urged that a decision be speeded in every way possible. Under terms of the New York application, the authority would join with the Hydro-Electric Power Commission of Ontario in building the 1.8-million-kw project at a total cost of more than $500 million. The two agencies would share equally both the installed capacity and the cost.

In approving the New York application, the FPC staff recommended that a conflicting application by the Public Power & Water Corp of Trenton, N. J., be set aside. The staff indicated that the Trenton concern, headed by Hugo A. Spalinski, had failed to show financial ability to carry out the project it proposed. The staff questioned engineering and financial statements made in connection with the application.

Examiner Law had previously declined to act on a motion by the staff to dismiss the application of the Trenton company. Taking no chances of a legal kickback, the staff treated the Trenton application fully in recommending that it be denied.

Staff recommendations signed by Assistant General Counsel Willard W. Gatchell urged:

- That a federal license be granted to the state power authority extending over a term of 50 years
- That the applicant commence construction within one year from the effective date of the license and complete the project within seven years
- That the commission reserve the right to determine at a later date what transmission facilities are a part of the project and are to be included in the license for the project
- That the licensee shall make a reasonable portion of the power capacity and output available for use within the economic market area in neighboring states and shall cooperate with such states to insure compliance with this requirement. In the event of disputes in this regard, FPC should step in.

No Preference Suggested . . . Despite pleas of public power organizations, there was no hint that the authority should be forced to give preference in sale of power to public bodies or rural electric cooperatives. The staff merely noted that American Public Power Association and National Rural Electric Cooperative Association had presented evidence along these lines.

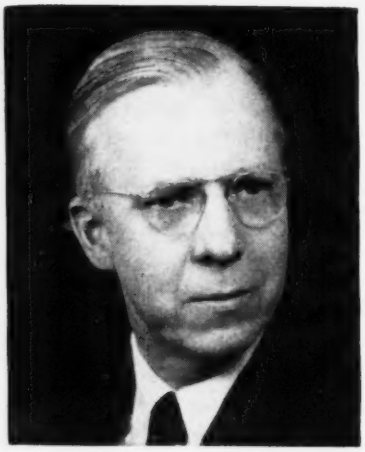
Gatchell Backed . . .

. . . by Dewey and New York Republicans for position on the Federal Power Commission

Willard W. Gatchell, assistant general counsel of the Federal Power Commission, has the support of a large block of powerful New York Republicans for a position on the five-man FPC.

Backing of Gov Thomas E. Dewey and a number of New York GOP lawmakers makes the 54-year-old legal expert a serious contender for a post on the regulatory body. Vacancy will occur when President Eisenhower withdraws the nomination of Chairman Thomas C. Buchanan, now serving under an interim appointment conferred upon him by former President Truman.

Gatchell had directed the legal work of the FPC staff in connection with the proposed St. Lawrence power project, for which New York State is seeking a license. This has brought him in close contact with John W. Burton, chairman of the authority and a trusted Dewey lieutenant. Last week the FPC staff recommended that the license be granted to the state (See story on this page.)



WILLARD W. GATCHELL

During his nearly 23 years of service on the commission's legal staff, Gatchell has been concerned almost exclusively with interpreting the Federal Power Act as it relates to electric utilities.

Electricity vs Gas . . . To some extent, this two-way race pits Gatchell the power expert against Jeff A. Robertson the gas expert and chairman of Kansas State Corporation, also a contender for FPC post. Present FPC members have a much broader background on gas matters than on electrical matters. This would seem to give Gatchell a slight advantage in filling the vacancy when it occurs.

A life-long Republican, Gatchell maintains a voting residence at Burdett, New York, where he owns two farms. He first came to the commission March 16, 1931. Except for an 11-month absence during 1945 and '46, he has been there ever since.

He was born in Washington, D. C. and attended public schools there. He holds a degree in law from the George Washington University and did postgraduate work at the Cornell Law School.

Roanoke Case Expert . . . He has become widely-known in recent years for his part in the Roanoke Rapids case, which has focused considerable attention on the private vs public power controversy. Gatchell's role, as FPC counsel, was to confirm the validity of a commission license issued to Virginia Electric & Power Co for a hydroelectric project on the Roanoke River.

Setback for SPA

Arkansas Supreme Court rules super co-op may not lease steam facilities to the agency

The five-man Arkansas Supreme Court ruled unanimously last week that a super cooperative in that state has no authority to build generating and transmission facilities for use by Southwestern Power Administration.

The action upheld a circuit court decision that the Arkansas Public Service Commission should not have granted a permit to the Arkansas Electric Cooperative Corporation for construction of a 30,000-kw steam generating plant and 544 miles of 69-kv transmission line.

The new decision was based on both state and federal laws. On the state level, the court ruled:

- Arkansas law states co-ops may sell their generation to "members only." SPA could not become a co-op member because membership is limited to persons in rural areas who agree to use electric energy as a consumer.

On the federal side, the court stated:

- Under Section 5 of Flood Control Act, SPA is given authority to market only the output of the Army Corps of Engineers' projects. Accordingly, SPA has no authority under federal law to buy the output of co-op steam plants and, similarly, has no authority to market any power or energy except that produced at hydroelectric projects built and operated by the Corps of Engineers.
- Continuing fund of SPA gives the agency no authority beyond that stated in Flood Control Act because legislative history of fund shows its purpose is to enable SPA and private utilities to consummate wheeling contracts and not to allow SPA to acquire more power and energy than is generated at hydro projects.

One of the judges concurred in the decision, but held that it should be based on state law alone, while Chief Justice Griffin Smith said he did not specifically approve the language of the opinion.

Frank Wilkes, president of Southwestern Gas & Electric Co (one of three private companies opposing the permit), commented:

"The victory is more for the co-operatives than anybody else. It means that rural electric program can develop in Arkansas for the benefit of the farmers and not for some federal agency."

SPA Administrator Douglas Wright stated:

"We merely had a contract with the Arkansas Electric Cooperative Corporation, subject to any court ruling. In view of this ruling, SPA will have to find some other way to serve the Arkansas area."

Chances for appeal of the decision are remote. Some legal experts say the Supreme Court would not accept it for review because it is based on state law.

Thus, will probably end the fight that began in 1950 when three distribution co-op members of the super cooperative obtained a $10,500,000 loan from REA to build facilities to serve 15 counties in Arkansas' Ozark Mountain area.

In addition to Southwestern G&E, private companies involved in the litigation were Arkansas Power & Light Co. and Oklahoma Gas & Electric Co. They were supported by the International Brotherhood of Electrical Workers, AFL.

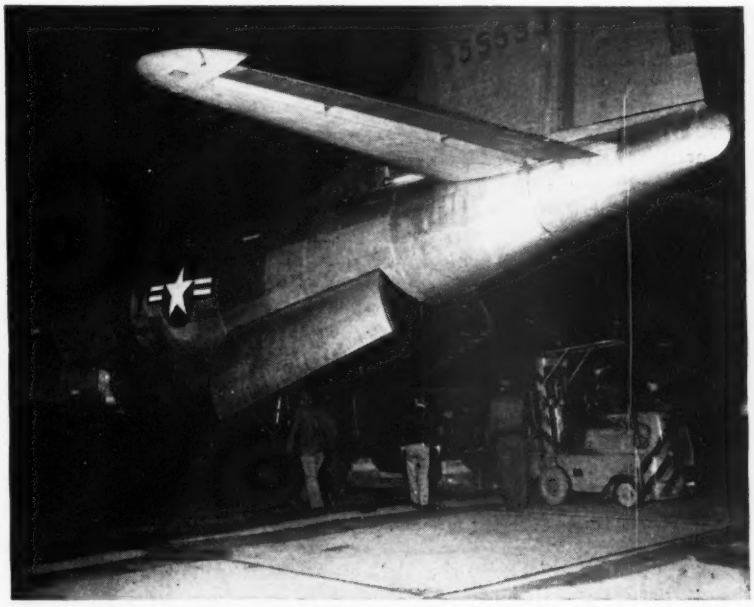
Fault at Substation Hits Stamford System

A fault originating in a feeder out of a substation serving the industrial area of Stamford at 9:30 AM on Feb. 20 caused failure and general tieup at the 4,160-v bus located in the Stamford generating station of Connecticut Power Co.

A company official reported that an oil circuit breaker in the generating station was closed to pick up the substation after the damaged substation equipment had been cleared. Oil thrown by this breaker ignited resulting in electrical flashovers and general damage to bus, open conductor, and the cable runs in the 4,160-v bus room.

Service was completely restored by 1:30 AM, Feb. 21. The greater part of the Stamford area system is fed from a 13.8-kv bus in the generating station, and this source of supply was not affected. What few outages there were lasted but a few minutes at the most.

Five workmen were slightly burned in the accident.



Air Lift for an Air Base

Because transformers were urgently needed at a western air base, the U. S. Air Force arranged a special airlift to transport three 500-kva, 44-kv units from the Pittsburgh (Pa.) plant of Allis-Chalmers Manufacturing Co.

The transformers are shown above, as they were loaded into a large cargo plane. Special cradle skids were made so the units could be shipped on their sides rather than upright, because of a lack of head room.

The transformers had been given top production priority at Allis-Chalmers. The method of shipment saved two to three weeks in transportation time.

End to Sao Paulo Shortage?

Installation of 160,000-kw steam plant may ease pinch on Latin America's largest industrial community

RIO DE JANEIRO (McGraw-Hill World News)—Latin America's biggest industrial community—the Sao Paulo-Santos area—now in the midst of a severe power shortage partly bebecause of lack of rain, is scheduled to have its shortage alleviated by 1954.

This overdue project has been recommended by the Joint Brazil-United States Economic Development Commission, in a project valued at $36 million, including request for a loan of $18,790,000 to pay for imported equipment necessary for the job to be done by the Sao Paulo Light & Power Co, Ltd.

The project centers around installation of a 160,000-kw thermal-electric plant already under way at Piratininga, near the state capital. This increase represents more than a quarter of present capacity of the company's installations.

The company, through its own installations and together with those of its associates, serves an area with a population of 3.5 million. The area embraces Brazil's first port, Santos, and the greatest concentration of industry, commerce, agriculture and finance. According to the 1950 census, the Sao Paulo state production of manufactured articles had a value of US $2.5 billion, or $1.1 billion more than in 1941 when Sao Paulo industries represented a third of the total of all Brazilian industries.

In keeping with this industrial growth, consumption of electricity has grown at an extraordinary rate, tripling from 1939 to 1951. Unable to keep abreast of this demand, the electricity supply system soon found itself in a crisis.

The Consequence . . . Some industries, trying to take advantage of off-peak hours, found themselves paying premium wages for night and Sunday work. Other industries cut production. One glass company, which in December 1952 could have been using twelve of its fourteen ovens, had power enough for only eight.

The same glass company has had to postpone production of a heat-resisting glass because it cannot receive assurances of a steady supply of power of at least 500-kw. A bad problem has been that of overloading, which causes supplies to be cut off without warning. One plastic company found that this cutoff cooled its molds so that it took three weeks to chip away cooled polystyrene.

Another consequence is low voltage, which slows motors down to a point where they burn out. Or if slow motors are kept running they interrupt the rhythm of production so that inferior products result.

To fight the scarcity, some industries have installed private diesel generators, using oil. This necessarily provides power at a rate much higher than the company's rates. And it increases the burden on foreign exchange for importing oil. The glass company found that it could install its own diesel plants to its advantage despite the added cost. But a steel foundry failed to find a solution in this direction, because the increased cost of its power would have been beyond its ability to pay.

Until the end of 1954 when the new thermal-electric unit will be in operation, the maximum demand will be three times that of the capacity of 160,000 kw unit being installed. The new unit at Piratininga, then, is no solution to the shortage, which will continue until the 1956 dry season, when new hydroelectric supplies under the company's expansion program may be available.

Despite the fact that the Piratininga plant calls for an increased import of fuel oil, at a cost of $7 million annually, the Joint Commission recommends the step as an emergency one. Benefits outweigh the cost in oil and foreign exchange. Also, this thermal-electric unit, which is designed for possible conversion to powdered coal, normally would be used as a reserve standby in a hydroelectric system.

Details of Piratininga Plant . . . The station will be equipped with two turbogenerators, each with a capacity of 95,000 kw. Steam will be provided by two radiant two-drum boilers. Fuel at first will be "Venezuelan Bunker C," with a heat value of about 10,250 calories per kg.

Project No. 24 of the Joint Commission will go to the International Bank for Reconstruction & Development (World Bank) for the $18.7 million loan for necessary materials for the plant. Costs for land, construction, interests and other services will total $36.3 million.

The project is based on assumptions that the World Bank will grant a loan similar to two already granted to the parent company, Brazilian Traction, Light & Power Co, Ltd, of Canada. Rate increases are not necessary, inasmuch as the rate schedule put in force last March 6 is deemed adequate for the predictable future.

Colorado Runoff Is Low, But Lake Mead Is High

Colorado River runoff this spring might drop 60% from last year's record, but there is enough hold-over storage in Lake Mead, the reservoir above Hoover Dam, to handle irrigation and domestic uses and power obligations next year.

Melted snow and ice, flowing downriver from the Rocky Mountains, is expected to add only 5.6 million acre-ft to Lake Mead April through July. Last year's record high was some 14 million acre-ft, and the 30-year average is 8.9 million acre-ft.

Possible maximum run-off this spring is 8.6 million acre-ft; and possible minimum is 2.6 million acre-ft.

Elevation of Lake Mead stood at 1161.58 ft above sea level early this month, compared with 1148.21 ft above sea level a year ago. The lake, which has a storage capacity of 31 million acre-ft, is expected to drop about 10 ft between now and early April when it will hit its low point.

Power Rationing in Africa

JOHANNESBURG (McGraw-Hill World News)—An additional 150,000 kw will be needed to meet power demands of new gold mines coming into production in South Africa. Since 1951 a system of voluntary rationing has prevailed within the mining industry. Under the system, known as "internal control," each mine works within a target set daily during the peak periods of 7 am to 2 pm in accordance with generating capacity available during the day. Use of this system has made load-shedding unnecessary.

Hoover Dam Unit . . .

. . . is in dispute between Nevada CRC and Los Angeles Dept of Light and Power

Officials of the Nevada Colorado River Commission, the City of Los Angeles Department of Light and Power and the Bureau of Reclamation met in Boulder City Feb. 13 in an effort to work out an agreement satisfactory to all as to disposition of power from a new generator, N8, to be installed at the Hoover Dam powerhouse.

This meeting follows a series of discussions as to which agency would get power from the big turbine which will go into the last slot available in the powerhouses and is designed to generate 82,500 kw capacity.

Says Nevada Will Stand Firm . . . Following a meeting between the Nevada CRC, Department of Light and Power officials and bureau officials at Henderson, Nev., Jan. 30-31, Gov Charles Russell of Nevada announced that Nevada will stand firm on its insistence that the generator be installed for the use of his state.

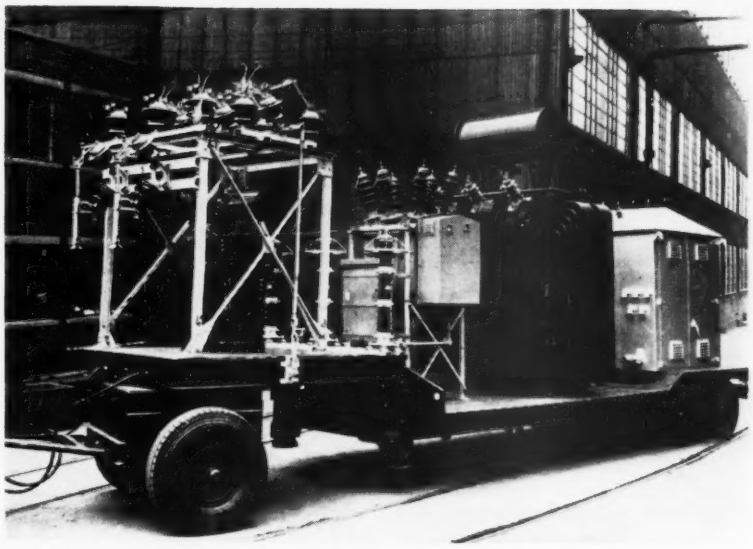
Representatives of the City of Los Angeles attending the meeting contended that the city can put the generator to more beneficial use at present than can the state of Nevada.

Although the main Nevada need now is for standby and "peaking" purposes, the primary reason for Nevada's insistence on full ownership of the generator is that, upon four years' notice, the Metropolitan Water District can recapture N7, which is now the main source of present Nevada power.

Bombshell . . . A mild bombshell was tossed into the meeting Jan. 31 when representatives of the City of Los Angeles suggested that, if N7 is taken over by the Metropolitan Water District, Nevada would have ample time "to build your own steam plant."

Members of the Nevada CRC said they were greatly disturbed by the implication of the water district representatives that the city would allow Nevada to be partially eliminated from the Hoover Dam power picture if N7 is withdrawn.

At present the Nevada CRC is studying possibility of using a steam plant for generating power and surveys are being conducted.



British Equipment Goes to Venezuela

LONDON (McGraw-Hill World News)—British manufacturers ship 33-6.9-kv 3-phase 4,500-kva portable substation to Shell oil fields in Venezuela. Assembled by Parolle Electrical Plant Co. Ltd, on a 40-ton Dyson 20-wheel trailer, it comprises high-voltage switch and cutout by Switchgear and Equipment Ltd., 33-kv outdoor circuit breaker by A. Reyrolle & Co. Ltd. and self-cooled transformer by C. A. Parsons & Co. Ltd. The enclosure at the right houses two 6.9-kv metal-clad oil circuit breakers for connecting to the overhead feeders, and control equipment for all three breakers.

English Electric Ships 275-kv Transformer

Britain's largest power transformer is on its way from the Stafford Works English Electric Co to a new British Central Electricity Board substation. This 120,000-kva, three-phase, autotransformer is the first of several which will tie the new 275-kv transmission system to the existing 132-kv grid.

Core and coils in the tank, without oil, weigh 88 tons. They are shown here on a special highway trailer which has a capacity of 120 tons.

THE ELECTRICAL WEEK

CONTINUED

Talking in Boise, Idaho, recently, Democratic National Chairman Stephen A. Mitchell describes the Eisenhower Administration as a "government by tycoon." He declares Secretary of Interior Douglas McKay has "made it pretty clear he's going to move at least some distance in the direction of giving the break to the private power monopolies as against public agencies in power development and transmission."

Green Mountain Power and City of Burlington, Vt., sign contract for sale of former's distribution system in Burlington for $1,085,000 to municipality and lease of city's generating plant by GMP for 7½ years at $185,000 annually . . . New England governors, meeting in Boston, announce preliminary plans to set up a regional pool of rate experts to aid the various state commissions in investigating petitions for higher phone charges. Idea may also be applied to power company cases.

TVA's Chairman Gordon Clapp and Director of Power George Wessenauer were seriously injured when their plane crashed near Bristol, Tenn., last week.

Kitsap PUD suit against sale of Puget Sound P&L scheduled to be heard in the County Superior Court at Port Orchard, Wash., on Feb. 20 was postponed to March 25 . . . Walker L. Cisler, Detroit Edison president, is elected an honorary fellow of American Institute of Management.

IN THE INDUSTRY

The Securities and Exchange Commission has been around long enough to file 18 annual reports. The last one, for fiscal 1952, just came from the press some weeks ago. In it the commission indicates that whether or not anybody else is pleased with it, at least it is pleased with istelf and its accomplishments. Quoting from the report:

"Thus, in what is probably the only instance of its kind in the history of the nation, an entire major industry has been almost completely reorganized in the short space of 12 years, and this has been accomplished with a staff which has declined steadily from 175 in 1940 to the present force of 35 employees engaged in this work in the fiscal year of 1952. When this work under Section 11 is completed in another couple of years, there will be no further expense to the taxpayer on this score."

A footnote explains that the Division of Public Utilities which assists the commission had 294 employees in 1940 and had 88 at the end of the fiscal year.

SEC Is Certainly Truthful . . . The commission's statement as to how it reorganized the electric industry is no exaggeration. On the other hand one might be justified in calling it an understatement. Youngsters entering the industry today will never know what happened. In this they resemble many men in the industry in 1930 who have since retired. They too never knew what happened. But the report does a little explaining.

"In the early thirties 15 holding companies controlled 80% of all electric energy generation; 20 systems controlled 98.5% of all transmission of electric energy across state lines . . . On June 30, 1952 electric utility plant owned by registered holding company systems constituted approximately 30% of the aggregate dollar amount of plant owned by all private utility companies."

The report went on to say that when the Section 11 reorganization program is completed, this percentage will decline to 23%.

Down From 214 to 57 . . . If these figures do not prove the change, the report provides additional proof. On June 15, 1938 there were 214 holding companies (electric, gas, et al) and 929 electric and/or gas companies subject to the Holding Company Act of 1935 and therefore to the control of SEC. As of last June 30 the figures were 57 and 192.

Apparently satisfied with these changes in the holding company plan of electric utility company ownership, SEC in recent years has been giving encouragement to the integrated holding company of which the American Gas & Electric Co is an example. It serves portions of seven states. When all holding company systems are integrated, it is expected that there will be only 16 of these left in the electric utility industry. Even this small total will include what are called operating holding companies such as Ohio Edison Co, Union Electric Co of Missouri, and a number of others. These are companies which hold subsidiaries and operate across state lines, but are themselves the dominant part of the group.

More Activity under Section 30 . . . At the time this report was written SEC was looking forward to more activity under Section 30 of the Holding Company Act. This allows SEC to recommend mergers of operating companies but gives the commission no authority to force these. However, it is rather doubtful as to the need of the industry for such outside prodding. The columns of Electrical World in the past five years have carried stories of close to 50 utility company mergers. Apparently if SEC will give its approval, operating companies will be quick to merge if both companies involved find such action beneficial.

TECHNICAL NOTES

ARCHER E. KNOWLTON

Multi-conductor control cables in trays appears most economical where cable traffic is heavy. Elsewhere single-conductor cable in pipe or duct shows best.

Load center substations strategically located on the power plant auxiliary system render feeder voltage drop practically negligible. Thermal capability is the primary consideration.

Tertiary windings, while highly reliable as a source for forced-cooling auxiliaries of transformers, have been known to fail without impairing the primary or secondary windings.

Vanadium in fuel oil is corrosive but it is a valuable metal. It can be reclaimed from the soot and ash removed from the boiler.

Demineralization of water results from properly executed ion exchange which is "the reversible interchange of ions between a liquid and a solid involving no appreciable change in the structure of the solid."

Better load records . . . lower cost! Safer and easier, too. No need to climb for ammeter checks. No guessing about overloads. Dial can be read from the ground.

New overload indicator takes "guess" and "work" out of load surveys

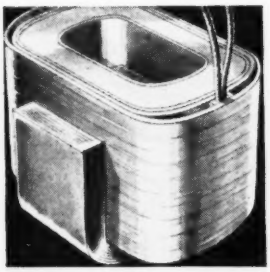
It flashes a warning . . . *and counts overloads, too!*

The new Westinghouse Type "PL" Overload Indicator eliminates load-check climbing, puts an end to guesswork about overloads, and does it more accurately than any comparable device.

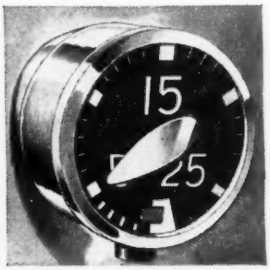
The red light tells that the transformer is now or has been overloaded. The dial completes the story, telling *how many times.* Since the indicator is operated by a thermostat embedded in the coil, indication is highly accurate because it is a direct reaction to copper temperature.

On each of the first four overloads, whether they're hours, days or months apart, the warning signal lights. It then goes out automatically as the overload passes, but the dial shows the number experienced. On the fifth overload, the signal light locks on as a continuous warning of the serious condition. The dial records consecutive overloads up to 28...far more than should occur before change-out. A pushbutton is provided at the base of the dial to clear the indicator for a new load-checking cycle.

Developed as the result of years of co-operation with utilities to determine the most useful type of overload indication, the Westinghouse Type "PL" Indicator opens the way to more accurate load records than ever before possible . . . at a fraction of the time and expense. Available on all conventional models of Westinghouse Single-Phase Distribution Transformers, 3 through 167 kva, 15,000 volts and below. Your Westinghouse representative will be glad to give you further information, or write direct to Westinghouse Electric Corp., P. O. Box 868, Pittsburgh 30, Pennsylvania. J-70669-A



Highest possible accuracy! The Westinghouse Type "PL" Overload Indicator is operated by a thermostat embedded in the transformer coil, where it reacts directly to copper temperature.

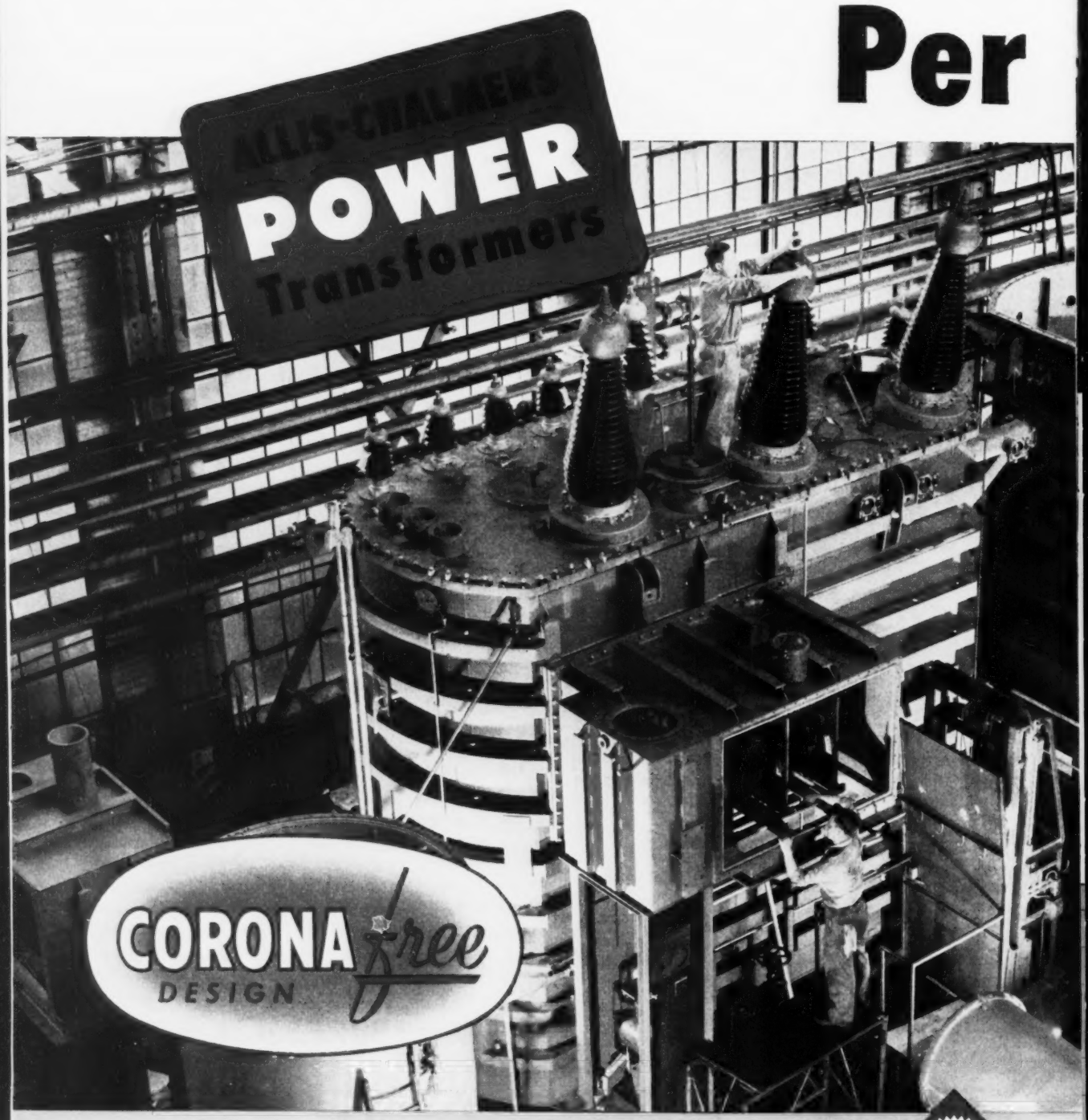


Warning...overworked transformer! The red light shows overload condition; the pointer indicates how many times this has happened. Reset button may be used to return the pointer to zero.

YOU CAN BE SURE...IF IT'S

Westinghouse

Maximum **Per**

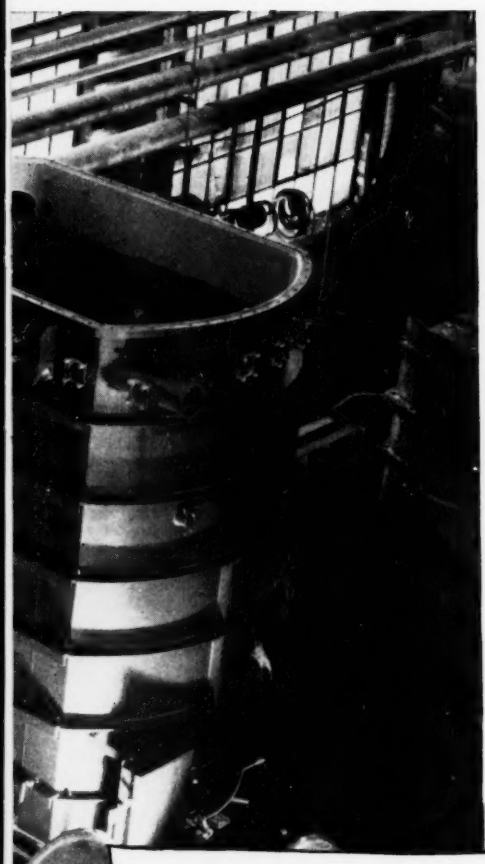


ALLIS-CHALMERS

A-C ALLIS CHALMERS

Milwaukee 1, Wisconsin

Return Dollar Invested



Corona-Free Transformers Stay Young Longer

Allis-Chalmers power transformers, thanks to their corona-free design, will produce profits on your system far longer than any transformer not thoroughly protected from the dangerous effects of corona.

How Insulation Design Helps Eliminate Corona

Insulation design reduces effect of concentrated dielectric fields. Danger from dielectric stress is reduced by placing insulation next to critical areas and by shaping insulation surfaces.

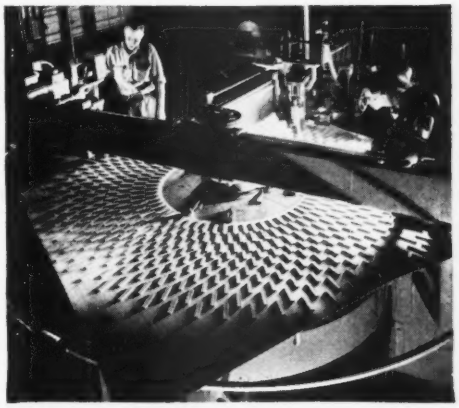
Proof of corona-free design comes when engineers use such tools as calculating boards, surge generators, and oscillographs to test for corona. These tests tell why it pays to install corona-free power transformers.

A-4016

Case Study in Improved Production Procedures

You get greater cooling efficiency from Allis-Chalmers power transformers thanks to the unique machine shown here. It fastens tens of thousands of spacers to the fuller board washers used in insulating transformers. The machine works quickly and precisely. There is no possibility that any of the thousands of spacers will be misplaced or improperly attached. This is quite a contrast with the days of painstaking manual labor the job used to require.

Within a few minutes one of the huge fuller board washers is placed in position and indexed. The machine then fastens each spacer separately and presses it into position. This machine is a good example of new machinery constantly being developed and manufactured in Allis-Chalmers extensive tool works. It's an important reason why you get the best workmanship and results when you specify Allis-Chalmers transformers.

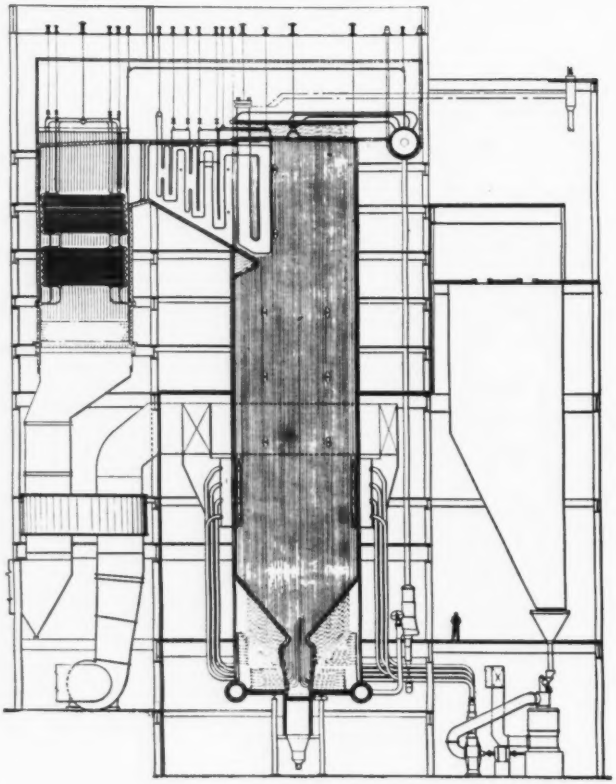


Milwaukee 1, Wisconsin

CROMBY STATION

Philadelphia Electric Company

C-E controlled circulation boilers



The C-E Unit shown above is now in process of engineering for the Cromby Station of the Philadelphia Electric Company which will be located in East Pikeland Township, Chester County, Pa.

It is designed to serve a 200,000 kw turbine-generator operating at a throttle pressure of 1800 psi with a primary steam temperature of 1000 F, reheated to 1000 F.

The unit is of the controlled-circulation, radiant type. It is a separated furnace arrangement with secondary superheater surface at the outlet of one furnace and reheater surface at the outlet of the other. Primary superheater sections and economizer surface follow both the secondary superheater and reheater surfaces. Regenerative air heaters follow the economizer surfaces.

Pulverized coal firing is employed, using bowl mills and tilting, tangential burners. Arrangements are made to use oil as an alternate fuel.

B-648

C-E

COMBUSTION ENGINEERING—SUPERHEATER, INC.

200 Madison Avenue, New York 16, N. Y.

ALL TYPES OF BOILERS, FURNACES, PULVERIZED FUEL SYSTEMS AND STOKERS; ALSO SUPERHEATERS, ECONOMIZERS AND AIR HEATERS

Attack Pelton Dam

Oregon fish interests launch assault on Portland GE's hydro project with bill in legislature

Commercial fishing interests of Oregon moved into the state legislature Feb. 16 with a frontal attack against Portland General Electric Co's Pelton hydroelectric project that would mean new and formidable hurdles for the private utility's effort to obtain a new state hydroelectric commission law and possible sanction of its Deschutes River program.

State Senator Robert D. Holmes, whose home bailiwick of Clatsop County is dominated by the salmon interests of the Columbia River, introduced a bill calling for Oregon to live up to terms of an interstate agreement which reserves all Columbia River tributaries below McNary Dam, except the Willamette River, for fish production and bans any river flow barrier that is more than 25 ft in height.

Hits 'Undue' Industry Encroachment . . . "Holmes" bill specifies reservation of Columbia tributaries "against undue industrial encroachment," would require permits of both the state game and the state fish commissions before any tributary waters could be diverted for irrigation or other purposes when stream flow falls below the annual average, and would authorize the two commissions to acquire by condemnation any dams, obstructions or water rights that would be in conflict with provisions of the act.

The Clatsop County senator's bill can count on sports fishing organizations and enthusiasts, who already are aligned against PGE's bill, House Bill 160, for strong backing. The commercial fishing industry was instrumental in blocking Pelton 17 months ago when the fish commission refused to approve of PGE's proposals for conserving Deschutes River salmon resources. PGE has countered that the river is primarily a trout stream, and that its value as a salmon spawning ground at Pelton and related Round Butte project site is negligible compared with power valuations obtainable. In this PGE has quoted the Federal Power Commission which approved Pelton.

Whether the Oregon legislature will heed Holmes' to the extent he proposes is uncertain at this time. It was recalled that the 1949 legislature defeated a bill which would have established as state policy a ban on power dams on the Deschutes. The question came up that time in connection with the interstate lower Columbia River fisheries development agreement to which Holmes has referred. This compact was between Washington and Oregon and the U. S. Fish and Wild Life Service. It was intended to offset the losses in salmon spawning waters caused by construction of high power dams on the upper Columbia and Snake Rivers.

$20-Million Fisheries Rehabilitation . . . Approved also by the Columbia Basin Interagency Committee and the Army Corps of Engineers, the compact provides for investment of some $20 million for fisheries rehabilitation in the lower Columbia River region. Some of this investment has been made. Holmes declared in introducing his new bill that the Washington legislature of 1949 showed its good faith by passing a law forbidding dams higher than 25 ft in streams where salmon exist. This law has been invoked in Washington to delay Tacoma City Light & Power Co's plans for building its proposed Cowlitz River projects.

"The proposed Pelton Dam would be a violation of the interstate agreement," Holmes insists. "For Oregon to renege on her word—and the passage of H. B. 160, is the first step toward granting of authority to PGE for the Pelton Project—would be unthinkable. It would sacrifice the interest not only of the people of Oregon, but also of Washington, Idaho, and Montana as well."

Six days earlier, Holmes had risen to the question of H. B. 160 with a request for Attorney General Robert Y. Thornton to rule on whether PGE's proposed hydroelectric commission law was unconstitutional. His point in this was a clause which would have empowered any hydro power dam licensee to acquire water rights which Holmes argued already had been reserved to the state under a 1932 constitutional amendment voted by the people.

The day after Holmes raised this point, PGE offered to strike the clause in favor of one which virtually eliminated any opposition to this provision of its bill.

Three Utility Employees Swept to Their Deaths

Three California-Oregon Power Co employees were swept to their deaths and two co-workers injured Feb. 10 by tons of earth and rock that slid off a mountain side in the North Umpqua River valley where the company has new hydroelectric projects under construction.

The five men were walking along a road between Toketee and Nowich camps, passing over an earlier slide blockade, when the rain-sogged earth let loose.

Buried were Albert Hubard, 38, Medford, Ore.; William G. Ketchem, 42, Boise, Idaho; and James R. Ackley, 37, Medford, Ore. Survivors of the avalanche were Herb Neldon, 37, Keokuk, Iowa, resident engineer of the Clearwater No. 2 project for Copco, and Edwin Carr, 25, Grants Pass, Ore.

The slide occurred on the company's private road about 75 miles up the Umpqua Valley from Roseburg.

All of the men had been working on assignments above Toketee Dam. According to P. G. Humphreys, Capco production superintendent, several slides had blocked the roadway in recent weeks since torrential January storms soaked all of the watershed district with a total of 15 inches of rainfall.

Seattle Council Hikes Pay of City Light Employees

The Seattle City Council has amended the city's 1953 salary ordinance to provide additional pay raises for some City Light employees, in a move which it hopes will settle a long-pending wage dispute with unions representing the City Light employees in negotiations.

Linemen, who were paid $19.60 a day last year and $20.29 since Jan. 1, receive $20.36 under the new schedule. Workers who have reached the maximum pay grade for their job classification will receive a monthly increase of $15, one year earlier than under the former schedule, while those who have not reached this top grade will receive $10.

The new schedule follows recommendations made by the Seattle Central Labor Council to the Joint Crafts Council of City Light employees.

CP&L CONTEST was judged by Dr S. H. Hobbs, left, of North Carolina; E. A. Kindle, advertising specialist, Georgia Power Co; and VP Eugene Leier, South Carolina E & G

←The Judges

...had to decide which town in Carolina P&L's service area was the "finest" on the basis of...

The Achievements →

Helping to Build 'A Finer Carolina'

That's the theme of a contest sponsored in its service area by Carolina Power & Light Co. First competition has ended, a second is under way. The Winner—the Carolinas

Nothing could be finer than to be in Carolina when there's a 16-cylinder drive on to make it "A Finer Carolina."

One such drive just ended with happy result; another is already under way. Instigator of both was Carolina Power & Light Co. which in March 1952 began sponsoring a community improvement contest called "Helping to Build a Finer Carolina." At the time the company offered a total of $8,750 in prizes to towns in their system area (see front cover), stretching across North and South Carolina.

Returns on the first contest are in; the judges have decided. The two top towns in the realm of Carolina-building were adjudged to be Sanford in North Carolina and Hartsville in South Carolina.

Five-Project Town . . . Sanford won top honors for a five-project program of community betterment:

1. Under a community buildings project townspeople built an addition to the county hospital, a woman's club building, a library for a high school.

2. Under public school improvements, they added a football stadium, graded a baseball field, landscaped the school grounds and started a botanical garden for high school students.

3. Under the recreation program the town redeveloped its McIver park, opened an access street to the colored playground, built a recreation park at the municipal pool and established irrigated grass greens on the municipal golf course.

4. Under its industrial and commercial improvement program, business men modernized storefronts, landscaped plant grounds and created a special committee to attract new industries.

5. Under a sprucing-up program, the citizens put on a clean-up campaign that reached private homes, city and county property (Sanford is a county seat), hotels, stores, etc.

The Cover Towns:

Latta, upper right, sold its citizens shares of stock to build a new swimming pool. Stock was quickly oversubscribed and pool in the picture was built.

Dunn, N. C., lower right, had as one of its five projects a campaign for traffic safety. Its Junior Chamber of Commerce put up the lighted billboard.

Goldsboro, N. C., lower left, helped its citizens put in dogwood and judas trees—1,300 were distributed to residents at $1 each. Mrs. W. C. Smith is shown being "helped" by her two sons as she braced one of the 18 trees she planted in her yard.

Plenty of Interest . . . In all, more than 800 projects in 148 towns were begun as a result of the utility's contest. Towns were divided into three classifications, according to population, and a number of prizes awarded in each. The competition has involved some six figure bond elections and industrial promotion of million-dollar projects in the larger towns. The personal competitive spirit appeared to be much more lively in the smaller towns, with each vying with its neighbor to be the "Finest" in the area. Many places put more heart than money into their projects. Such was the case in Bahama, N. C., where handrails were installed on church steps to aid old people.

Not too many new ideas were

BEFORE ↑

Southern Pines, N. C. scrapped the old school bus it had been using for recreational activities

AFTER →

Townspeople collected $4,530 to buy the kids a new bus through dances, cake sales, ballgames, and the like

BEFORE ↑

Asheboro, N. C., decided to do something about the useless, eroded clay pit behind the high school

AFTER →

Citizens raised more than $30,000 in individual contributions to make it into a graded, turfed athletic field

BEFORE ↑

Robbins, N. C., before the contest was still using this outmoded means of garbage collection

AFTER →

As part of the contest, the people contributed funds to buy a new truck for the cleanup chore

dreamed up. Many communities, as the committee in Lamar, S. C., put it, were just getting around to "neglected civic duties."

Red Pope, director of advertising for CP&L and organizer of the contest, feels the program is serving its purpose of giving towns in the service area a starting point for improvements.

For the company, the contest has been excellent toward promoting public and community relations. Management knows too that community growth also means company growth.

The competition didn't end with last year's deadline. The 1953 contest was announced as soon as the winners of last year's were made public. This year, in addition to prizes for community achievement, prizes will be offered to individual farmers for soil and water conservation practices. Of $9,550 in prize money offered, $2,800 will go to farmers. Soil conservation supervisors from both the Carolinas will be asked to judge this second "Finer Carolina" competition.

GARDEN CLUB MEMBERS in Jacksonville, N. C., turned a neglected park into a recreation area as part of Carolina P&L's "Finer Carolina" contest. The women did much of the labor of clearing the area to be used and staged social functions to finance cost of walkways, picnic grounds, shrubbery and the like

NW Surcharge Battle Continues

Private and public power interests exchange verbal blows. Norwood of NPPA challenges utilities' return on investments

Gus Norwood, executive secretary of the Northwest Public Power Association, Vancouver, Wash., recently tossed burning oil onto the dispute flaring over private utility surcharges.

"The surcharge is outrageous. It should be abolished and should be completely absorbed by the stockholders of the companies," Norwood declared. "This could be done as a charge against surplus accounts of the companies."

Norwood questioned the rates of return on investment and asserted a report by the President's Water Resources Policy Committee show that from 1937 to 1949, inclusive, Portland General Electric Co.'s rate of return on average net electrical plant investment was 8.57%. The public power group spokesman said this was sufficient so that stockholders' earnings were enough to buy any of the plants over the 13-year period. He said returns for Pacific Power & Light Co were 8.4% and for Mountain States Power Co 7.78%. He declared these were excessive, that most states limit private utilities to 6%.

Norwood accused private utilities were buying a combination of dump and firm power from Bonneville Power Administration at an average rate of 2.32 mills, whereas public utility districts pay 2.8 for firm power, thereby obtaining insurance against shortages.

Private Power Reply . . . Thomas W. Delzell, chairman of the board of PGE, replied, "We don't make a penny on Bonneville power. We pass it along at cost and all savings resulting from its purchase in past years have been passed directly to the customers. Norwood's figures on rates of return are interesting but completely inaccurate."

John Dierdorff, vice president of PP&L, said Norwood was quoting a "school book figure" on rate of return and ignored "factors recognized by regulatory authorities as necessary to run a business."

He said Norwood's statement "smacks to me of an attempted defense of discrimination. It is as though he says those served by public utilities are American citizens first class and those served by private utilities, American citizens second class."

Press Takes Stand . . . The dispute reached to the editorial pages of the press as well as the news columns. In an editorial labeled "That Unfair Surcharge," in which The Oregonian of Portland called for leveling of the burden upon all classes of customers; the paper noted that some private utilities had in the past refused to accept available BPA power blocks because of resale clauses.

"So far as Portland General Electric is concerned," the paper commented, "the 20% surcharge on light bills would not have been necessary had the company accepted a 20-year contract for Bonneville power offered in 1946. This would have assured PGE of a supply of firm power which later went to other customers. PGE did not go through with the contract because of objection to federal control of resale rates. Bonneville took the position that control of rates was required under the law, and has insisted on this provision in all its contracts. Right or wrong, PGE's contract went down the drain and the power was sold to others."

Paul Bunyan was a piker...

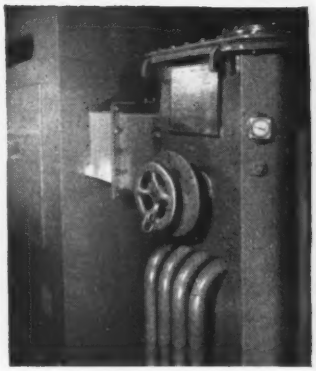
Even Bunyan's fabulous culinary feats fade into insignificance beside the factual everyday production and handling of mountains of food at the new National Food Stores plant at Hopkins, Minnesota.

Here, the meat cooler space alone will hang 300 cattle at one time... the bakery has a daily output of 45,000 loaves of bread, 4,500 pounds of cake and a ton and a half each of rolls and doughnuts! Hundreds of tons of food—sold through 150 stores in four states—flow through this gigantic building every day.

An operation of this type would be impossible without electricity—the source of power for production for all modern industry. At the National Food Stores plant, this power is distributed at the right voltage at each load center by Wagner Unit Substation Transformers.

Wagner Transformers are an important part of the equipment in many great industrial plants because they have a reputation for complete dependability and for unfailing service.

Wagner Engineers are qualified to specify the correct transformer for *your* needs. Consult the nearest of our 31 branch offices, or write us.



This Wagner Unit Substation Transformer furnishes power for the bakery of National Food Stores. Similar substations supply the lighting and power loads in other sections of the building.

Wagner Electric Corporation
6456 Plymouth Ave., St. Louis 14, Mo., U.S.A.

Wagner Electric Corporation
EST. WE 1891

ELECTRIC MOTORS • TRANSFORMERS
INDUSTRIAL BRAKES
AUTOMOTIVE BRAKE SYSTEMS — AIR AND HYDRAULIC

No 'Stop' Order on Projects

Federal 'economy' move will have less affect on civil public works, including power facilities, than on military

Civil works of the federal agencies —and that includes Interior, Atomic Energy Commission, Tennessee Valley Authority and the Army Engineers —are going to be less affected than military public works by the Eisenhower-Dodge economy order ("In the Industry," Feb. 16, p 10).

That prospect began to emerge last week as the government's civil construction agencies moved cautiously and carefully into the job of carrying out the White House budget instructions. Defense Department had shown no such hesitation the previous week in issuing a directive stopping all new contract awards for military and naval public works until the projects have been cleared by the Secretary.

Civil works of the federal government must abide by the Feb. 3 letter from Budget Director Joseph M. Dodge. But that letter required no holdup in contract awards such as Defense Secretary Charles E. Wilson called for in his directive to the military services three days later.

Dodge Directives . . . Dodge laid down a required course of action for every department head. But he established no definitive criteria for construction agencies in determining what work should be curtailed, suspended or postponed.

Here are the broad Dodge directives as spelled out in his letter:

- Proceed only with those projects that are clearly essential, and on such projects employ the strictest standards of economy.
- Review all proposed or authorized construction on which work has not yet begun; propose construction for the rest of this year and until June 30, 1955, only if the projects are "clearly essential."
- Stop construction, slow down or reschedule any project already under way if need be to conform with the "clearly essential" policy.
- Eliminate unnecessary programs, question all work in this light, and above all do not permit increase over the January rate of obligations except on complete justification and specific approval unless some law specifically requires it.
- Review all programs preparatory to making recommendations for revising Truman's 1954 fiscal year budget downward. These recommendations for economy must be in the hands of the budget director by March 2.

Without exception, the construction agencies are making a tight review of all work under way or scheduled for award. But it appeared none of the agencies plans anything so drastic as a blanket stop-order on construction awards.

Even in the Department of the Army, the civil works of the Corps of Engineers escape the drastic holdup ordered by Defense Secretary Wilson on military construction. But Secretary of the Army Robert T. Stevens has instructed the Corps to make a close restudy of all projects to determine whether any can be stretched out or postponed to reduce federal spending in the current fiscal year and in fiscal 1954, which starts July 1. At the same time, the Corps is making a microscopic survey of its organization to see if administrative expenses can be cut.

Tough Task . . . As does every other construction agency, the Corps faces a tough problem in trying to eliminate projects that Congress has authorized money to built. The howl that will go up from local residents deprived of a promised project won't make a pleasant sound in the Army Engineers' offices or in the Congress.

But—like the other civil construction agencies—the Engineers must do something to show they are strongly in accord with the new administration's economy directive. If they cannot come up with a saving of, say, 5% by the time they turn in their report to the budget director it will probably go back for further skinning.

That is the personal opinion of some public works people in the federal government. The Budget Bureau last week had no known intention of requiring fixed percentage cuts by the various departments or their construction agencies. But Dodge is not expected to rest content with any report that doesn't promise a measurable cutdown for fiscal '54.

McKay's Stand . . . An even better example of the "go slow" approach being taken by the civil works agencies is that of the Interior Department. Secretary Douglas McKay states flatly that Interior will issue no such drastic implementing order as that put out by Defense Secretary Wilson. "No work will be stopped," says McKay.

McKay wrote the first draft of instructions to the many construction units of his department early last week. It was then up to his top department staff to put the order in shape for general distribution. Up to Thursday morning, the draft had not yet filtered down to the department's budget officer for his comments.

Next to the military, the Atomic Energy Commission is the government's biggest construction buyer. Like other construction agencies, AEC has exhaustively examined and reviewed its expansion program internally and in off-the-record testimony before Congressional committees. AEC considers all its construction projects essential. Cutting them back is a tough task.

For reasons of security, proposed AEC projects are rarely identified in Congressional legislation. For example, the $1.2 bill Ohio Valley project never was named in the authorizing or appropriation bills that preceded its announcement.

Other AEC projects are in the same position, so far as printed laws are concerned. But no one expects the administration or the Congress to approve a slowdown in nuclear energy construction.

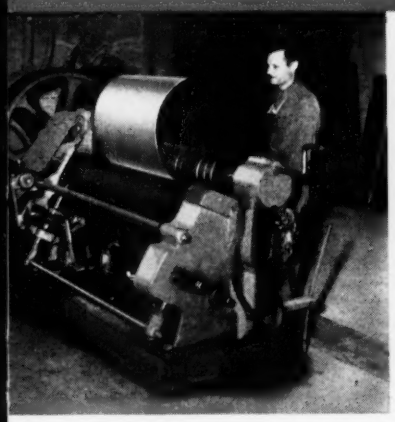
Another agency with a big construction program going through a tight re-screening of its projects is the Tennessee Valley Authority.

If AEC should reduce the schedules for Paducah, Savannah River and Oak Ridge, TVA could slow down its own expansion program. That would be TVA's only chance for a big saving.

Hawk: Pshaw!

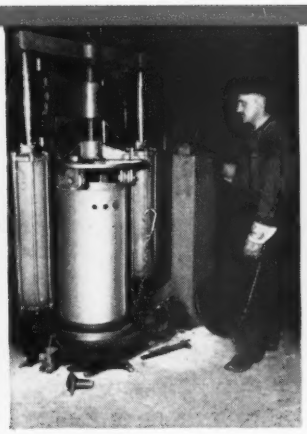
After careful vigil, linemen discovered the cause of repeated short circuits occurring at dawn along the 66-kv transmission lines of the Yorkshire and North Lincolnshire Electricity Board areas in Britain. The saboteurs turned out to be kestrel hawks power-diving on the porcelain insulators, apparently mistaking them for prey.

This is how *Kuhlman* makes distribution transformer tanks

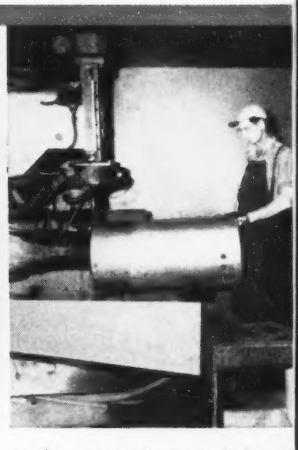


1. All Kuhlman transformer tanks are made of heavy gauge copper bearing steel. Here a tank begins to take shape. The steel has been measured and cut and the necessary openings made. It is now being rolled into the shape of a cylinder.

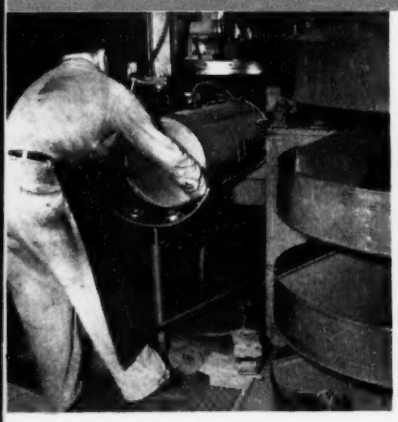
2. After the metal has been shaped, the edges are brought together and electrically welded to form an oil tight seam.



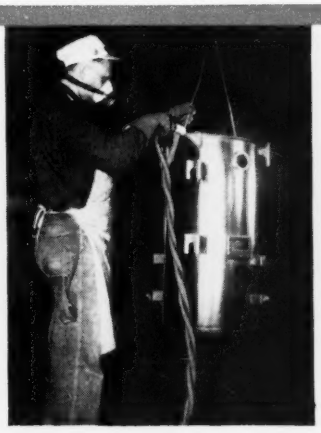
3. Next, the top end is "rolled down" to a smooth lip to form a suitable gasket seat.



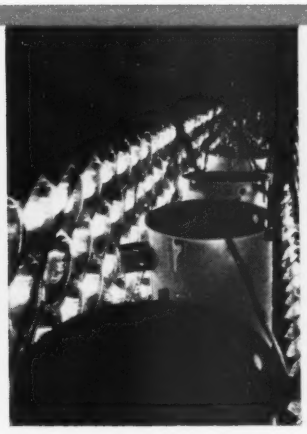
4. The next step is to attach the bottom. This is first "spotted" and then electrically welded all the way around to form an oil tight seal.



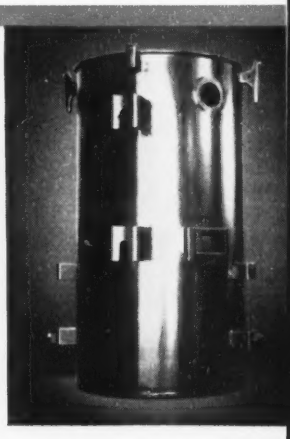
5. After the bottom end has been "rolled down" to form a smooth lip, the necessary accessories such as lifting ears, nameplate bracket, and mounting brackets are spot welded onto the tank as shown above.



6. Before they are painted the tanks are chemically cleaned and then shot blasted to assure a clean painting surface. Each tank receives a coat of rust inhibiting primer and two coats of corrosion resistant paint.



7. After each coat of paint the tanks are "baked" with infrared lights to insure a more durable finish.

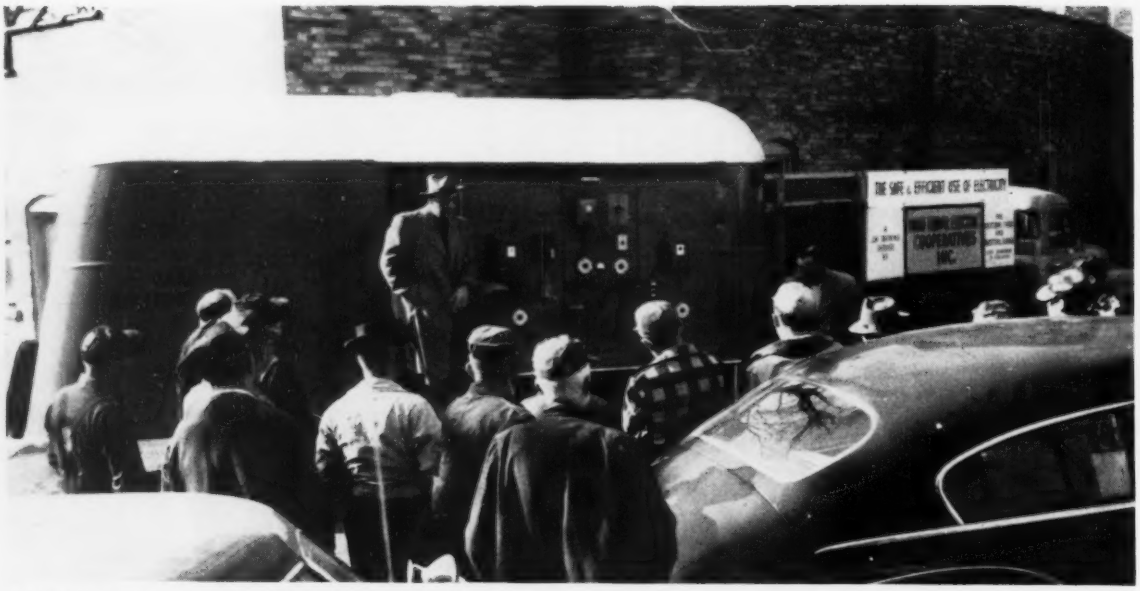


8. And here is a completed tank, ready to receive its core and coil assembly and all necessary connections. Surfaces of Kuhlman tanks have successfully withstood 500 hours of salt spray and weatherometer tests.

Kuhlman transformers have been "on the line" for over half a century. Many of the earliest Kuhlman transformers are still in service—proof that Kuhlman builds rugged, highly efficient transformers. Specify Kuhlman. For more details about distribution transformers, ask for Bulletins CS-201 and CS-202.

Kuhlman **ELECTRIC COMPANY, BAY CITY, MICHIGAN**
CRYSTAL SPRINGS, MISSISSIPPI

EXPORT REPRESENTATIVES: *International Standard Electric Corporation,*
15th Floor, 50 Church Street, New York 7, New York. Cable address: Microphone, New York.



OUTSIDE: C. A. High, job training supervisor, Ohio State Department of Education, instructs lineman from one of the cooperatives

Statewide Cooperative Hits the Road

W. E. STUCKEY, State Manager, Ohio Rural Electric Cooperatives, Inc, Columbus, Ohio

What size service entrance should I have?
Why does my meter run faster than my neighbor's?
How many circuits should I have in my home?
Why do my lights dim when the water pump starts?

These and dozens of others are questions that many farm people in Ohio and throughout the nation didn't have to answer until recent years. In many cases, as they have purchased new labor-saving equipment, they have added outlets without regard to wire size. They have simply put in larger fuses, rather than adequately wiring their homes.

To show them what they should do Ohio Rural Electric Cooperatives, Inc. has sent around to its 28 distribution co-op members a house trailer prepared to demonstrate the "Safe and Efficient Use of Electricity."

The statewide association, whose member systems serve more than half the farms in Ohio, constructed the trailer in cooperation with co-op electrification advisors and the Department of Agricultural Engineering at Ohio State University. It contains seven demonstration panels which explain:

- **Reliability of meters**
- **Effect of voltage drop on light, heat, and power**
- **Wiring materials**
- **Lamps and controls**
- **Types of service entrances**
- **Circuit and motor protective devices**
- **Motor starting overload controls**

Indoors, tripods are used to display the panels, and a public address system, which is included, makes it possible to demonstrate to large audiences. For outdoor meetings and at fairs one side of the trailer is opened and the door used as a platform. Also helpful to discussion leaders are outlines written by the electrification advisors and edited by Cernie Kline of the Ohio State Extension Service.

Started Last Fall . . . Beginning late last September C. A. High and Owen Manning, job training instructors for the Ohio State Department of Education, took the trailer to every cooperative in the state and conducted employee training meetings. In most instances, all employees and several directors of the cooperatives attended.

Response has been so excellent that during the past five months the trailer has been used at an average of four meetings per week, with more than 3,000 total attendance.

Three-Way Use . . . The trailer is being used in three spheres: (1) for group meetings; (2) at field days, and county and state fairs; and (3) for employee training.

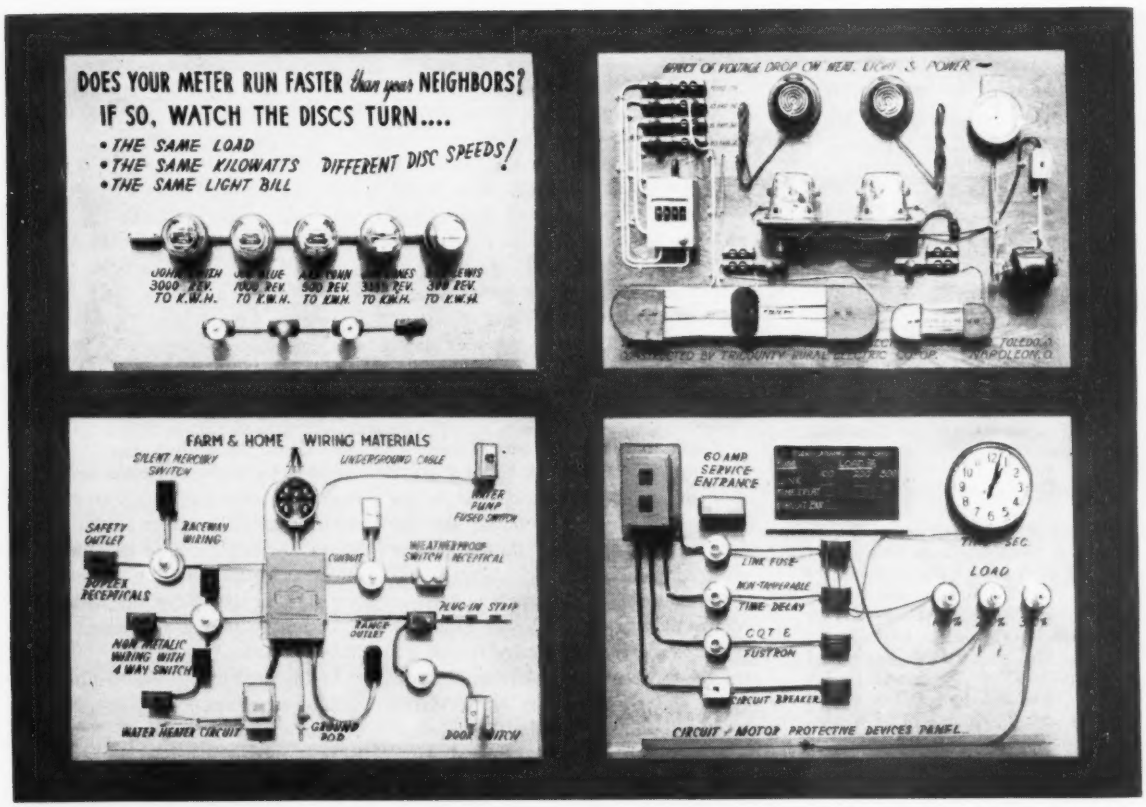
Among group sessions are those with vocational agricultural classes, veterans classes, high school science classes and assemblies, 4-H clubs, granges, Farm Bureau councils, Extension Service, member meetings, and service clubs.

Vo-ag instructors are especially enthusiastic. Many have requested return engagements, so adult groups might study the panels. In fact, several teachers have requested that the trailer be left with them for further study.

All in all, the electric co-ops in Ohio feel that the program has been a success, helping to reduce farm fires, and enabling members to secure more efficient use of the electricity which they buy.

INSIDE: Harold Darst, education advisor for Pioneer Rural Electric Cooperative, holds a meeting with a class in vocational agriculture

to Tell Wiring Story With Panels



HERE ARE four of the panels that show: top left, different types of meters have different operating characteristics; top right, insufficient wire size will reduce the amount of voltage supplied to an appliance; bottom left, different types of wiring materials and the need for safety, proper material, adequate circuit, and correct installation; and bottom right, how fuses protect different kinds of loads on electrical circuits

Reclamation v. FPC

Bureau claims commission had no authority to issue permits for Kings River projects

Charges that the Federal Power Commission lacked jurisdiction to issue licenses for power developments on the North Fork of the Kings River because the major portion of the lands had been withdrawn from public entry was made by the Bureau of Reclamation in the opening brief (Jan. 28) of its suit to set aside the FPC's permit order.

The suit, in U. S. District Court of Appeals, 9th Circuit, San Francisco, seeks to upset three FPC orders granted Nov. 10, 1949 which issued permits to Fresno Irrigation District for possible hydroelectric development of Pine Flat Dam and Reservoir, and to Pacific Gas & Electric Co for expansion of its Balch hydro project above Pine Flat on the North Fork and for another hydro project plant on the North Fork.

Bureau's Contentions . . . The bureau's brief asserted:

1. That the FPC lacked authority since Secretary of Interior had withdrawn the lands involved for federal development. According to the Federal Power Act, no agency has a right to license on lands reserved for reclamation.

2. That the FPC refused to recommend the North Fork development to Congress for possible federal development and had further failed to wait a specific length of time before granting licenses for developing power at any government dam, as required by the Federal Power Act.

3. That the FPC did not consider the development of the Kings River under the comprehensive Central Valley Plan and standards of the power act, but assumed that the lands were useful for development of power generation only in granting licenses for the PG&E projects.

4. That under the Flood Control Act of 1944, the right to develop the hydro electric potentialities of Pine Flat Dam and any dam built by the Corps of Engineers must be disposed of through the Department of Interior.

Swedes Map Largest Plant

Largest hydroelectric power station in Sweden will be built on the Ume River, above the northeastern port city of Umea, on the Gulf of Bothnia. Work on the 375,000-kw station is expected to begin in the fall. The plant will be named Stornorrforsen. Water will be led through a mile-long inflow tunnel to the plant, which will be blasted out of rock. The water will then flow into the river through a tunnel three miles long, the biggest ever bored through a mountain in Sweden.

Power Developments in the Soviet Union

The Soviet Union is planning to exploit the vast hydroelectric potential of the Angara River to make possible development of aluminum, coal, metallurgical, and salt industries in Eastern Siberia. The river's source is Lake Baikal which has an estimated potential of 60 billion kwhr a year.

This news of power developments in Soviet Russia was contained in recent radio broadcasts from behind the Iron Curtain monitored for McGraw-Hill World News.

Recent broadcasts have revealed the USSR is constructing a high-tension power line between Kuybishev on the Volga and Moscow. Designers of the line were reported as still bothered with problems connected with transmission over so great a distance. Another difficulty is the design of turbo-generators of sufficient size.

The generators are to be 90 ft high, claimed by Russia to be the largest ever assembled. The Kuybishev plant will have capacity of 2.1 million kw and is expected to be in operation in 1955.

Russia also has announced that the first power station on a Siberian river will go on the line soon. It is located at Urst-Kamenogorsk on the Irtysh River. Another station on the river will be built at Bukhtarma.

Other Russian projects include four hydro plants on the lower Don, 60 power stations on collective farms and tractor stations in Kazakhstan, Central Asia, and three major hydro plants to supply rural areas in Kazakhstan.

Monitoried broadcasts reveal there have been frequent power failures in the Budapest area of Hungary. Poor quality coal and irregular rail service were cited as the cause.

Licensing Rights . . .

. . . of federal and state agencies near showdown as FPC aide counters court verdict

A step has been taken toward another showdown on the state v federal rights issue involved in licensing hydroelectric projects.

A U. S. Court of Appeals decision handed down in January appears to give state bodies at least equal authority with the Federal Power Commission in determining who shall develop potential water power sites (EW, Jan. 12, p 58).

But a more recent decision by FPC Examiner William J. Costello poses the question in a slightly different manner.

The decision, subject to confirmation by the commission, held that the project of Winter Electric Light & Power Co on the East Fork of the Chippewa River in Wisconsin is located on a navigable stream.

The company had sought this additional finding after its previously-granted FPC license had been questioned by the Wisconsin Supreme Court.

The project, already partially completed and in partial operation, occupies both federal and non-federal lands. The Wisconsin Public Service Commission had issued a state permit for the dam in 1950, but this action was brought before the courts. It was on issue of court review that the state Supreme Court ruled.

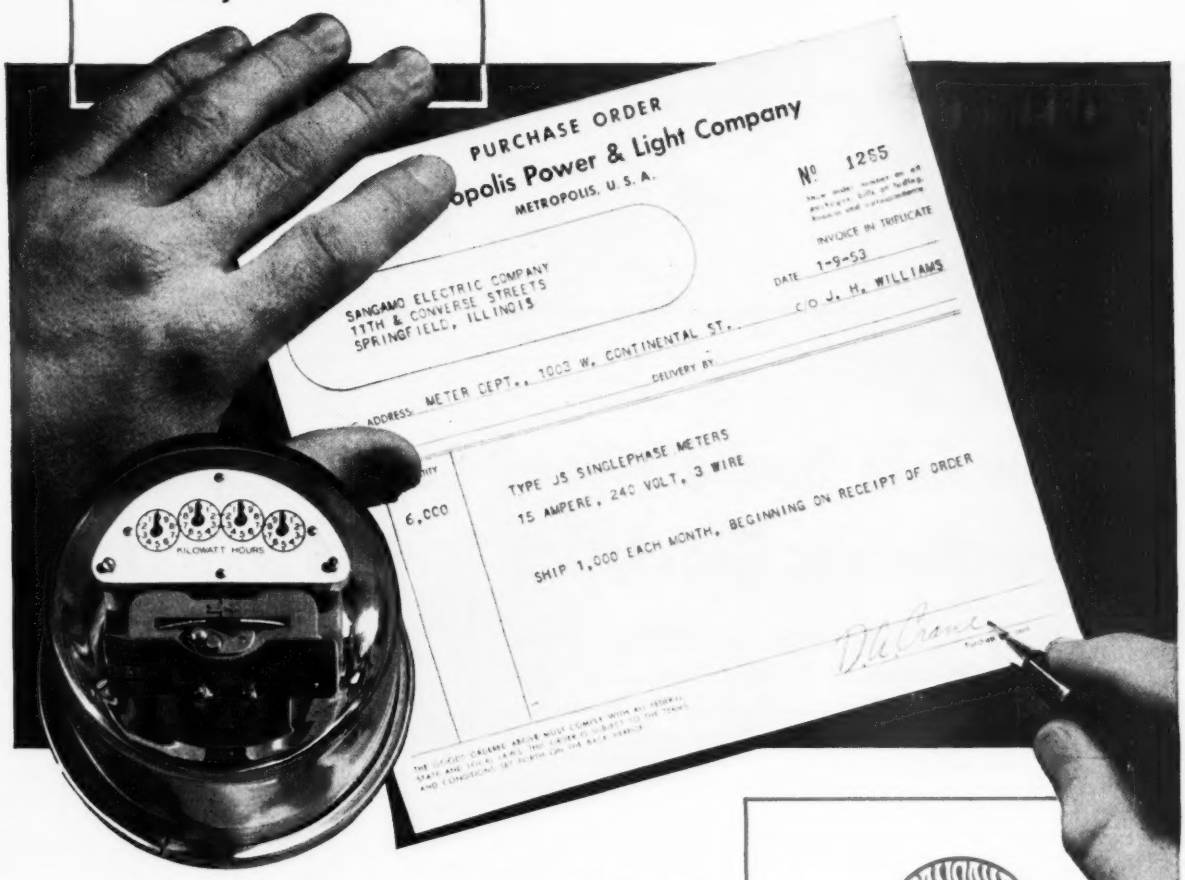
With the finding of navigability, the company now assumes it can complete the project and proceed with its operation whether or not its state permit is revoked or withheld.

This assumption, Costello explained, is based on the premise that "by being assigned by the federal license to the role of a developer of water power from a navigable water of the United States it would acquire complete and effective insulation from the effect of any state action in conflict with or inconsistent with the provisions of the federal license."

In his decision, Costello noted the opinion of the appeals court, but said he was assuming the previously issued FPC license was lawful and the only issue presented to him was whether the stream at the site constitutes "navigable water of the United States" as defined in the Federal Power Act.

a full measure of confidence

Sangamo J Meters



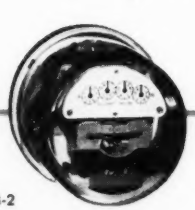
You can install Sangamo Type J Watthour Meters with complete confidence that your customers will neither be overcharged or undercharged. In the thirteen year performance record of J Meters, test records from utilities prove a remarkable degree of unchanged accuracy.

You can use J Meters in highly corrosive atmospheres for years with full confidence that both external and internal meter parts will resist the effects of corrosion. Sangamo's development of special anti-corrosion treatment and selection of materials prevents meter deterioration on outdoor installations, even under the most severe conditions.

You can buy Sangamo meters with absolute confidence that your choice will be approved by those who *know* meters—the men of your meter department.

SANGAMO

SANGAMO
ELECTRIC COMPANY
SPRINGFIELD, ILLINOIS



Only Measured Facts are Known Facts

JM 53-2

LET'S LOOK AT THE FACTS

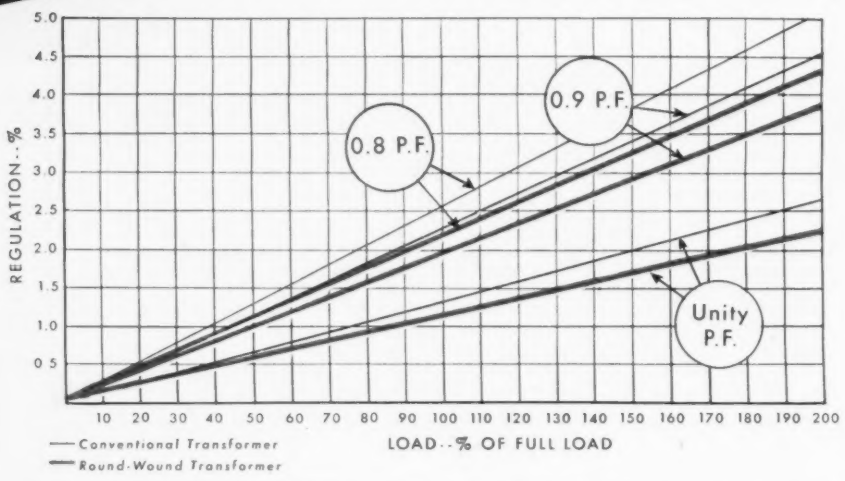


FIGURE 1—Regulation of a standard 50 kva 2400—120/240 volt Round-Wound transformer compared with that of a conventional transformer, showing the effect of load and power factor on regulation.

How L-M Round-Wound Design Improves Transformer Regulation

A brief discussion of the design factors affecting regulation, and the differences in the design of Round-Wound transformers that result in better regulation at all power factors.

By **JAMES G. EVERHART**
Chief Engineer,
Transformer Division,
Line Material Company

Voltage regulation, always an important factor for consideration, has in recent years received even more attention. Higher average secondary voltage at full load means brighter lights, less lamp flicker, and improved operation of the growing number of appliances. It is particularly important in the operation of television receivers, where low voltage produces far greater effect than is generally known by the public.

Higher voltage produces greater revenue to the utility company and, in these days of extremely close margins or actual operating losses, utility companies cannot afford to neglect any source of potential revenue.

State power commissions also have become factors in maintaining regulation. And with the higher average loading of transformers prevalent today, voltage regulation becomes a somewhat more pressing problem.

Use of Capacitors Helpful

Much can be gained from the use of capacitors to improve voltage conditions. But capacitors alone cannot be expected to solve the entire problem.

Neither can adequate primary voltage, ample transformer rating, or shorter secondaries of ample size. The transformer *itself* must be designed to provide good regulation.

Methods of Improving Regulation

Poor regulation in a transformer is largely the result of high impedance due to high reactance, and high copper loss. Often large mean-turn diameter is the cause of high copper loss and poor regulation. In general, most design improvements that will reduce copper loss will also contribute to improved regulation. The problem in transformer design is to achieve the desirable results without the sacrifice of other desirable performance characteristics.

Regulation also must be uniformly good over all power factors. Figure 1 indicates the effect of load on regulation, it being evident that the poorest regulation is obtained with combinations of high loads and low power factors.

Regulation with Round-Wound Design

A Round-Wound transformer basically consists of a wound core, with long round coils wound directly onto the annealed core. With the exclusive L-M method, the core is not cut or unwound in any way. This is not necessary since the coils are wound directly onto the core in an L-M designed winding machine. The construction is shown diagrammatically in Figure 2.

The design achieves a number of advantages—better cooling throughout the coils, with better overload capacity; lower exciting current; lower copper loss.

"Round-Wound" is a Line Material Co. trademark.

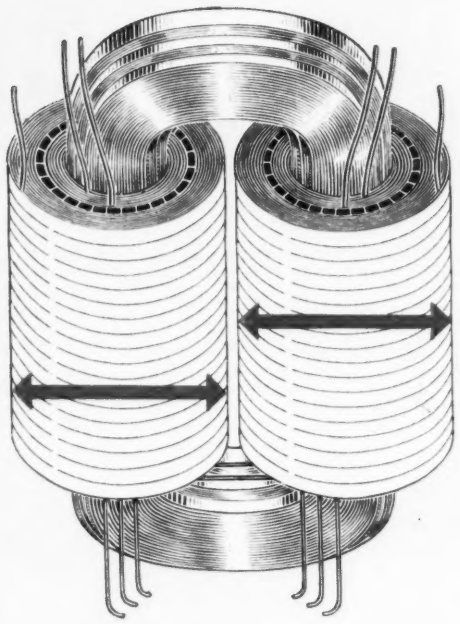


FIGURE 2—Round-Wound design. Long round coils are wound directly onto a wound core. Coils have low mean-turn diameter, a principal factor in the good regulation of Round-Wound transformers.

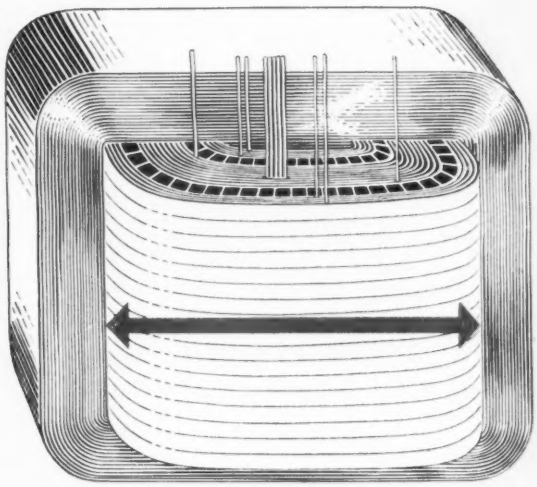


FIGURE 3—Shell type transformers generally have a much larger mean-turn diameter contributing to higher impedance, higher reactance, higher copper loss, which in turn results in poorer regulation.

The desirable smaller mean-turn diameter of the L-M coils is evident, by comparison of Figures 2 and 3 and examination of Figure 4. A higher efficiency core-coil arrangement also permits fewer winding turns. The combination of smaller turn diameter and fewer turns results in lower reactance and impedance, and in the desirable regulation indicated by Figure 1.

Thus the economy-minded power company can well take advantage of this Round-Wound design to secure, at one time, the savings offered by better regulation, lower losses, lower exciting current, and higher overload capacity.

Desirable Characteristics of L-M Round-Wound Transformers

Better Regulation: low resistance and reactance, providing low copper loss and better regulation, with more revenue to the utility and better service to customers.

High Short-Time Overload Capacity: long round coils and ample passages for oil circulation provide exceptionally good cooling with relatively low copper and hot-spot temperatures, permitting higher short-time overloads and higher load factors.

High Uniform Impulse Level: round coils are wound evenly, without hammering to shape; have longer creepage distance; ample insulation between layers and windings.

High Short-Circuit Strength: round coils have fundamentally superior strength characteristics, contributing greatly to the long life of Round-Wound transformers.

Low Exciting Current: because the wound core is not cut or disturbed, air gaps are not created in assembly, and exciting current is appreciably lower in this design.

Better Loss Ratios: the Round-Wound design makes possible an improved ratio of losses with lower total losses without sacrificing low exciting current.

For More Information

Ask the L-M Field Engineer for bulletin on L-M Round-Wound design, or write Mr. Everhart at Line Material Company, Transformer Division, Zanesville, Ohio (a McGraw Electric Company Division).

Round-Wound transformers are filled with ORTO®, L-M's oxidation-resistant transformer oil, inhibited for longer life.

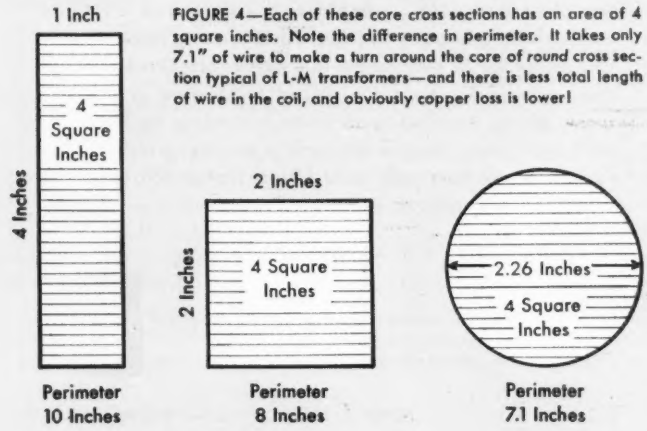
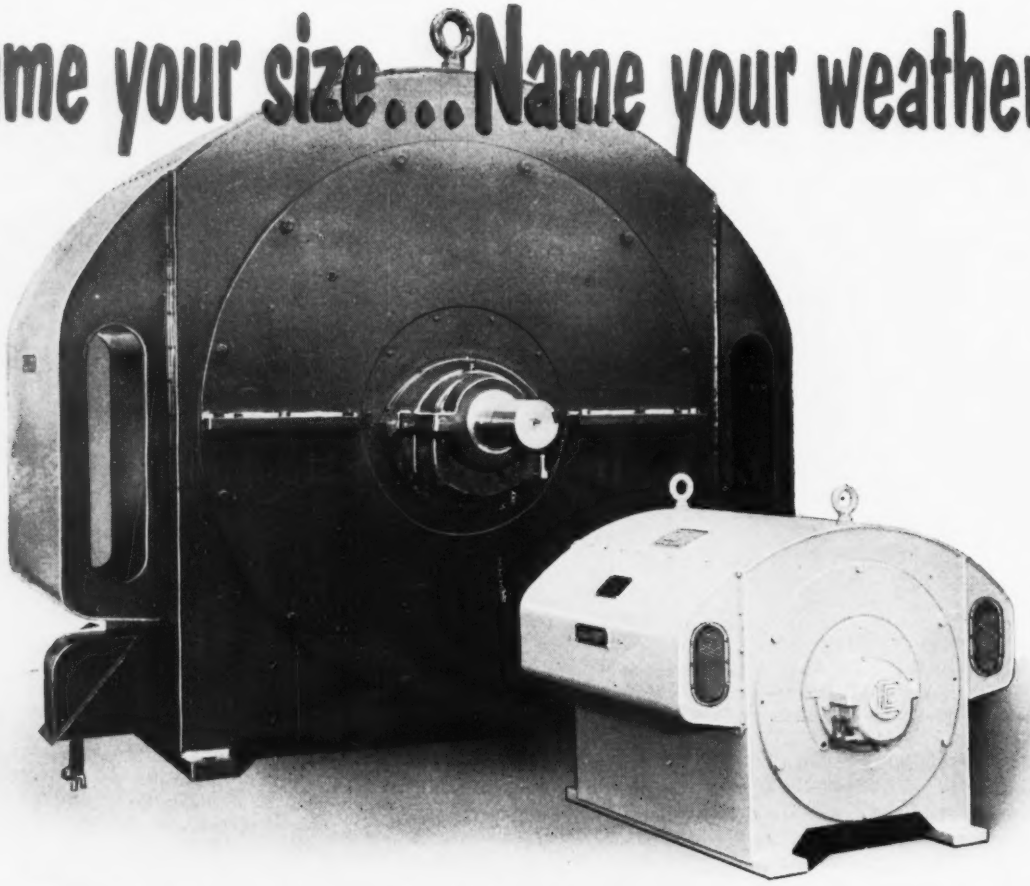


FIGURE 4—Each of these core cross sections has an area of 4 square inches. Note the difference in perimeter. It takes only 7.1" of wire to make a turn around the core of *round* cross section typical of L-M transformers—and there is less total length of wire in the coil, and obviously copper loss is lower!

LINE
MATERIAL
Transformers

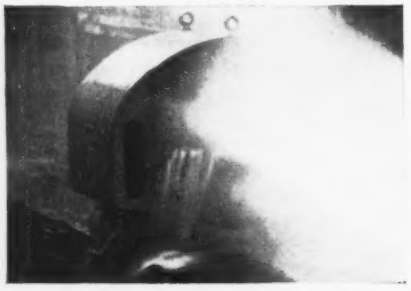
Complete Coordinated Equipment
for Distribution Today

Name your size...Name your weather!



ELLIOTT OUTDOOR SPLASHPROOF

...the motor that needs no roof!



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Elliott outdoor splashproof motor undergoing operating test under torrents of water, going strong after hours of deluge. When disassembled, windings were found completely dry.

IN ANY CAPACITY you need, ranging from 150 hp to 3000 hp and even higher, as graphically shown in the illustration above.

FOR ANY CLIMATE from salt fog, raging blizzard, torrential rain to dry dust storm.

THIS IS THE MOTOR that is broadening horizons for plant designers . . . simplifying installations . . . reducing piping layouts . . . eliminating housing costs. For this motor has its own house, in a welded steel enclosure that *without the need for special foundation or duct work,* admits ventilating air alone, excluding air-borne rain, snow, sleet, dust or debris. The bulletin gives complete data. Contact your local Elliott representative, or write Elliott Company, Ridgway, Pa.

ELLIOTT Company

R2-17 **RIDGWAY DIVISION**

ELLIOTT ELECTRICAL EQUIPMENT INCLUDES CROCKER-WHEELER INDUSTRIAL MOTORS

NEWS ABOUT PEOPLE

Fred Shedd Appointed VP . . .

. . . of Ohio Valley Electric. American G&E veteran also assumes vice presidency of Indiana-Kentucky Electric, OVEC subsidiary

FRED R. SHEDD

Fred R. Shedd has been elected vice president of Ohio Valley Electric Corp. He also was named vice president of Indiana-Kentucky Electric Corp, an Ohio Valley Electric subsidiary.

A veteran of 33 years' experience in the American Gas & Electric Co System, Shedd has been assistant division manager of the South Bend Division of Indiana & Michigan Electric Co for the past four and one-half years. Indiana & Michigan is a subsidiary operating company of American G&E.

To Plan Operating Units . . . In his new position, Shedd will co-ordinate operations involving generation and transmission facilities being constructed in the Ohio Valley by OVEC and IKEC, and will be responsible for planning and development of operating organizations for these utility facilities.

Shedd, who will have temporary offices in New York, later will assume the duties of general manager of OVEC with permanent offices in Ohio.

Shedd joined the American G&E system in 1919 at the Glen Lyn (Va.) plant of Appalachian Electric Power Co. After several engineering assignments throughout the system, he became superintendent of power plants for Ohio Power Co, an American G&E affiliate, in 1943. Five years later he went to South Bend to work for Indiana & Michigan.

•

John J. Klosin has been made manager of the Utility Division of Thomas & Betts Co, Inc, Elizabeth, N. J. Klosin has about 14 years' experience in the electric power field as a sales engineer with James R. Kearney Corp and as a field engineer for Burndy Engineering Co.

Robert G. Ely, vice president of Connecticut Light & Power Co, has been elected chairman of the New England Council Farm Electric Service Committee. **Frank R. Bailey,** director of the Farm Service Division for Central Maine Power Co, has been elected vice chairman and **Francis E. Robinson,** manager of the NE Council's agriculture department, has been named committee secretary.

O. B. Wilson has been appointed to the newly created post of industrial instruments sales manager for the Industrial Division of Minneapolis-Honeywell Regulator Co. Wilson, who has been serving for the past year as the division's field sales manager, joined Honeywell in 1923.

Cyril J. Webb, who joined Nova Scotia Light & Power Co, Ltd, in 1951 as assistant treasurer, has been appointed treasurer. Before going to Nova Scotia L&P, he was managing director of Pembroke Electric Light Co, Ltd, Ontario.

G. M. Wallace, manager of Bailey Meter Co's Denver district, has been appointed an assistant sales manager with headquarters in Cleveland. Wallace, who started with Bailey in 1940, was made manager of the Denver district in 1945.

P. C. Smith has been appointed manager of Westinghouse Electric Corp's Transportation and Generator Division at East Pittsburgh, Pa. Smith, an electrical engineer, has been serving as assistant to the manager of the division since 1944. **W. R. Sugg, Jr.,** manager of the division's heavy traction section, has been named assistant manager of the division. **G. A. Moore** has been advanced from superintendent to manager of manufacturing of the division.

Richard H. Bamford has been appointed assistant sales manager of Rockbestos Products Corp, New Haven, Conn., manufacturers of insulated wire and cable. Bamford, who began with Rockbestos in 1939, has been district sales manager for the company in St. Louis since 1949.

EDWARD RUISCH

Ruisch Elected to Head Iowa Utilities Group

Edward Ruisch, assistant to the president of Iowa Public Service Co, has been elected president of Iowa Utilities Association. He succeeds Sutherland Dows, president of Iowa Electric Light & Power Co.

Ruisch, who was graduated from the school of engineering of Iowa State College, joined Iowa PS in 1920.

Other officers chosen at the association's recent annual meeting are P. L. Mercer, Union Electric Co, first vice president; and J. T. Schilling, Iowa Power & Light Co, second vice president. Ben A. Webster was re-elected secretary-manager.

Umbert F. Corsini has been made general superintendent of the Steel & Wire Works of the American Steel &

Wire Division of United States Steel Corp at Donora, Pa. Corsini, who was general superintendent of American Steel & Wire's South Works in Worcester, Mass., replaces **Harold Cope,** who has been named Duluth (Minn.) district manager of operations. **Wade B. Houk,** who has been division superintendent of South Works' wire mills, succeeds Corsini as general superintendent.

Louis J. Schrenk, Detroit (Mich.) Public Lighting Commission superintendent for 22 years, will retire in June. He has served that body for 44 years.

Harry K. Wilcox, Jr, assistant sales manager of the Switchgear Division of I-T-E Circuit Breaker Co, has been appointed sales manager of the R&IE Equipment Division at Greensburg, Pa. Wilcox, who joined the I-T-E company in 1936, has filled the Switchgear Division post in Philadelphia since 1949.

E. P. Dunlaevy, vice president of Phelps Dodge Copper Products Corp, has been elected a member of the board of directors of G&W Electric Specialty Co, Chicago, which manufactures electrical apparatus for high voltage cable systems.

Reginald H. Bowman, manager of the power sales department of Cambridge (Mass.) Electric Light Co for the past eight years, has retired after 39 years' service. His successor as manager is **James Corrigan.**

Stanley W. Ellis has been named acting chief engineer of the Massachusetts Department of Public Utilities. Ellis, who joined the department in 1937, has been engineer of the gas, electric, and water division since 1947.

Assigned to New Posts

Colorado Fuel & Iron Corp, New York, has made two appointments to its Eastern Division. H. C. Allington, who has been general manager of sales of the firm's Wickwire Spencer Steel Division since 1947, has been elected vice president in charge of sales of the Eastern Division with headquarters in New York. L. A. Watts, assistant general manager of sales for the Wickwire Spencer Steel Division for the past two years, has been named general manager of sales of the Eastern Division.

FRANK E. SCHULTZ

Royal Electric Appoints Frank Schultz President

Frank E. Schultz has been elected president of Royal Electric Manufacturing Co, Chicago, manufacturers of power switching equipment. The company also elected P. L. Warren as chairman of the board of directors. Warren will continue as executive officer and direct the overall policy of Royal.

In other appointments, James M. Trotter was elected vice president in charge of engineering and production and Joseph R. Warren was named vice president and sales manager.

Schultz, a thirty-year employee of Royal, has served successively as foreman, superintendent, and since 1946, vice president and general manager. Before joining Royal in 1944, Trotter was associated with Great Lakes Dredge & Dock Co, Commonwealth & Southern Corp, and Consumers Power Co.

•

S. E. Ratcliffe, assistant treasurer of Virginia Electric & Power Co since 1938, has been named treasurer of the utility. He succeeds **Paul R. Williams,** who has resigned from the treasurer's post but will continue to act in an advisory capacity on financial matters. Vepco also appointed the following three assistant treasurers: **Arthur L. Clark, Alvis M. Clement,** and **Robert G. Schneider.**

Thomas W. Korb has been named secretary and general counsel of Harnischfeger Corp, Milwaukee, to fill one of two offices vacated by the recent retirement of **William F. Heilman,** secretary and comptroller. In other appointments, **Frederick Tabbert** was made comptroller; **A. W. Pipenhagen,** secretary and treasurer; and **L. H. Sondermann,** assistant comptroller and tax manager.

Harold P. Bull has been named national sales manager of Bendix Home Appliances Division of Avco Manufacturing Corp. Bendix also appointed **Terrence D. Kennedy** to succeed Bull as sales manager of the Laundry Equipment Division.

C. E. Bitzer is new manager of jobber and distributor division sales for Anderson Brass Works, Inc, Birmingham, Ala., (EW, Feb. 16, p 31). Before accepting this appointment, he was affiliated with Westinghouse Electric International Co as manager of the appliance department. Bitzer left National Supply Co in 1940 to join Westinghouse Electric Corp's Merchandise Division, Mansfield, Ohio. In 1945 he went to the international company, assuming the manager's post five years later.

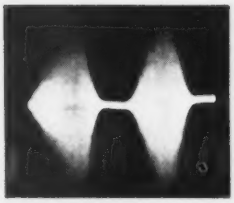
H. Herbert Magdsick, for the past 23 years executive engineer in the application engineering department of General Electric Co's Lamp Division at Nela Park, Cleveland, has retired. His retirement follows more than 42 years' service with GE. Magdsick, a former president of the Illuminating Engineering Society, last year was awarded the society's Gold Medal.

OBITUARY

Charles Moon, 68, chief of the inductance and capacitance section of the National Bureau of Standards, died Jan. 31. Moon, a member of the American Institute of Electrical Engineers, joined the NBS staff in 1923.

George E. Heidenreich, Sr, electrical engineer in charge of the electrical engineering section of the general engineering department of Cincinnati Gas & Electric Co, died at Cincinnati Feb. 5. He joined the utility in 1924 as electric construction engineer.

Albert J. Kohler, 81, retired Federal Power Commission engineer, died Feb. 1 at Washington, D. C. Kohler joined FPC in 1941, retiring in 1950. He was a member of the American Institute of Electrical Engineers.



Oscilloscope trace indicates ionization of this power cable.

4 AWG stranded 3/c RoZone® insulated, shielded, RoPrene sheathed power cable, 5000 volts.

How we prevent trouble *before* trouble begins

The machine, pictured above, is your assurance of maximum protection against one of the most insidious of cable hazards . . . ionization.

Ionization, which is the electrical break-down of air in pockets within the insulation, often causes several destructive electrical effects. Included are possible ozone cutting, reduced dielectric strength and increased dielectric loss . . . any or all of which may result in reduced cable efficiency and early failure.

Perhaps the most hazardous thing about ionization is that ordinary visual, physical and electrical tests will not show evidence of it.

But you can count on maximum protection against ionization when you specify Rome insulated cables. *Every foot of every cable rated at 1000 volts or over is thoroughly tested by this specially designed ionization detector.*

This completely new NONDESTRUCTIVE testing method accurately measures the corona level of the entire cable. This extra step in Rome Cable's standard manufacturing procedure was developed by Rome engineers and was first described in AIEE paper 48-198, "The Measurement and Investigation of Ionization Level of Rubber Insulated Cables," presented in August, 1948. A copy is yours for the asking —check and sign slip below.

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MANAGEMENT AT WORK—IV

Vice President
C. Maynard Turner
Does This:

Research—

Determines policy and lays out department's research program.

Keeps abreast of industry-wide research and participates therein by way of committees.

Planning and Development—

Assists management group in formulating broad policies upon which company rates are based.

Controls planning through use of economist's, statistician's, and cost analyst's material and coordinates plans with those of management group and other departments.

Maintains contact with regulatory bodies, supervising compliance with requirements regarding rates and service.

Directs necessary studies for hearings and rate cases and coordinates work of all departments relative thereto.

Administration—

Confers with management on administrative policy.

Directs rate administration to conform with company policy.

Reviews city ordinances, franchises, and special agreements for service, extension agreements and other contractual papers.

Records, Routine, and Reports—

Makes periodic reports to management covering department operations.

Makes special reports to management showing trends in company business and general economic outlook.

Supplies basic information to all departments of company on any matter affecting rates or rate policies.

Rates and Research Go Together . . .

. . . at Cincinnati G&E whose 3 services, regulated by 3 state agencies, FPC, and 65 Ohio cities, make C. M. Turner a busy man

• When a utility company provides electric and water service in three states and gas service in two,

• When each city in the one state getting gas, electric, or water service has primary jurisdiction as to rates,

• When the Federal Power Commission also has some rate jurisdiction,

Then the man in charge of rates for that utility has a job and not a position.

Such a man is Charles Maynard Turner, vice president of Cincinnati Gas & Electric Co and head of its Rate and Economic Research Department.

In Ohio the utility provides all three services. In some 65 cities and villages where it provides electricity its rates are subject to local city councils as they are in the 25 communities where it supplies gas. These rates are further subject to the Ohio Public Utilities Commission as are all rural rates. In two villages the company's water rates are also under local control.

In Kentucky CG&E's subsidiary, Union Light, Heat & Power Co, provides gas, electric, and water service.

In Indiana another subsidiary, West Harrison Electric & Water Co, provides electric and water service.

Therefore, CG&E's rates are subject to the regulatory agencies of three states plus the FPC.

Naturally this multiplicity of regulatory agencies has led to a rate structure that is most complex. The situation in Ohio is the most complicated because of the many municipal jurisdictions. However, Turner in his program for more uniform rates has consolidated the schedules into six levels and hopes to get these down to three: large cities, small cities, and rural.

I. A Thinker and Planner

As boss of the Rate and Economic Research Department, Turner might be listed as major general in charge of strategy and logistics. In this position he reports to Ernest S. Fields, vice president and general manager. His duties are listed on the preceding page. But how he carries them out is not explained.

In brief Turner is a planner and thinker. It is his job to set the rates for company services. He does this by accumulating and assembling all pertinent data. This is then passed on to the tacticians, the company's lawyers and other personnel.

Turner believes in staying in the background. In Ohio whenever a city is considering a rate ordinance, local managers or sales executives are given the job of dealing with municipal officials. If a state commission hearing is involved, the company lawyers may take charge. But always available is the silent Mr Turner with his arsenal of facts and figures.

The CG&E vice president is a strong proponent of negotiated rates. He tries to maintain good personal relations with the state commissions and their staffs. He sees that others keep in touch with the municipalities so that some one is available to discuss rate problems whenever requested.

II. His 2 Obligations

This thinking is typical of Maynard (that's what everybody calls him) Turner. One does not have to spend much time with him before his high sense of responsibilty becomes apparent. To him his job carries two obligations:

1. To make certain his company's services are priced to provide a reasonable return under present and probable future conditions.

2. To make certain that customers get full value for every dollar paid the company.

To meet either of these obligations would be easy. To meet both is most difficult. But he is not or never was a shirker. So he keeps his eight assistants on their toes. These include a rate analyst, two cost analysts, a rate administrator, an economist, a statistician, and two general assistants.

He runs this staff with a voice so soft that it is often difficult to hear him, and he gets results by setting an example which if his staff follows they must necessarily produce good results.

III. Believes in Research

Turner is a staunch advocate of rate and economic research. He classifies research as either remedial or preventative. The former means getting together data after trouble has started. The latter, and the kind Turner likes, means anticipating problems and having the data ready when the first sign of trouble breaks or else using it to prevent trouble. It is this kind of research that Turner would like to do more of. In fact he boldly asserts that no electric company in the country knows enough about the manner in which its customers make use of the electric energy they purchase.

The CG&E executive puts his research data to good use. He is a member of the company's Management Committee which meets at frequent intervals. Here with the president, general manager, treasurer, other vice presidents, construction engineer, purchasing agent, and manager of the property department, Turner helps set company policy. Much of this is determined by the data he submits.

IV. Has Industry Attitude

But Turner is not to be considered merely as an efficient executive of an Ohio utility. He believes in industry responsibility. Through his work on such committees as these he has attained national recognition: Load Research Committee of the Association of Edison Illuminating Companies (he is chairman), Electric Rate Research and Electric Water Heater Committees of Edison Electric Institute, and the Rate Committee of the American Gas Association.

His committee work often takes him out of town. In addition his work is often interrupted by calls for advice from rate experts in other companies. Since 1926 when he wrote his first article for Electrical World, he has been writing for various industry magazines and in addition has made many appearances on the speaker's platform.

V. Rich in Industry Experience

Turner's background may explain his national attitude toward industry affairs. He was born in Chicago, went West, and was graduated from the Everett, Wash., high school. While working for the Puget Sound Power & Light Co, he earned his BS in EE from the University of Washington in 1923. He then joined Westinghouse Electric Corp and later became a lighting salesman in the Chicago office.

In 1925 he joined Seattle City Light as a distribution engineer but soon quit to join the Washington regulatory commission as an assistant engineer. In 1930 he resigned as assistant chief engineer to go to work in the Rate Department of Electric Bond & Share Co (later Ebasco Services, Inc.) at New York. After a four-year period, 1937-41, as assistant to Vice Pres Walter Burke, he returned to the Ebasco Rate Department as assistant manager.

One of Ebasco's clients was Cincinnati G&E. His familiarity with its problems led to his association with the company's Rate Department in March 1950. Soon after he became vice president of the company and its Kentucky subsidiary.

VI. Boosts Junior Achievement

As a newcomer in Cincinnati Turner is just beginning to participate in civic affairs. His first big project was the establishment of the local Junior Achievement program. He founded Junior Achievement of Greater Cincinnati, Inc, and is now its president. This work often takes his evenings. But he believes that Cincinnati teenagers deserve the many advantages of the JA program.

Because information is his business, Turner devotes much of his time to acquiring it. He has a rule that if it takes longer than five minutes to read any publication, it goes home with him. This means his briefcase is usually bulging with such publications as "Econometric Reports," Kiplinger and other news letters, EEI reports, Electrical World, "Business Week," "Gas Age," and countless other reports and publications. It usually takes him about two hours every evening to absorb this material. But as he says, "It's the only way I can get the information I need."

Engineers from Dearborn Motor Corp join co-authors (on combine) in picking wheat kernels during test

Mechanical Ventilation Can Prevent

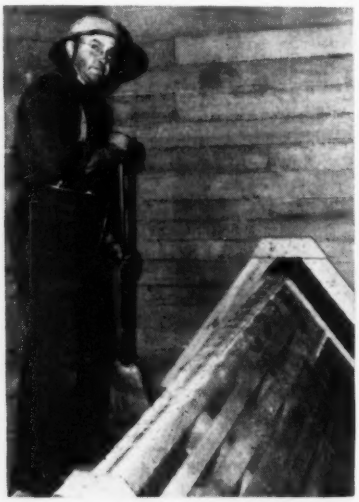
Tests conducted under auspices of Toledo Edison Co show wheat with high moisture content can be stored safely

VIRGIL MARVIN, Field Supervisor, Farm Power Department, Toledo Edison Co.

C. C. CONNOLLY, JR, Associate County Agent, Lucas County, Ohio State Extension Service

Farmers have learned through bitter experience that it isn't a good idea to store grain which is not sufficently dry. Not enough air circulates naturally to prevent spoilage.

A solution to this problem—mechanical ventilation—has been proven practical by a series of tests undertaken at a farm in McClure, Ohio. Be-



Humidity of forced air is checked . . . proper drying pressure is obtained . . . and farmer Connolly cleans up

Marvin (left) and Connolly examine 15.7% moisture Seneca wheat

Grain Spoilage

hind the project were members of Toledo Edison Co's farm power department. Cooperating with them were representatives from Dearborn Motor Corp, farm equipment manufacturers, the co-author from the Ohio State Extension Service, and C. C. Connolly, Sr., owner of the farm.

Their first problem was to determine at what per cent moisture wheat could be combined most satisfactorily.

Theoretically, the time to harvest is at grain maturity—when the transfer of nutrients to the seed stops. General practice, however, is to harvest when moisture content is low enough to insure spoilage-free storage.

To discover if farmers have to wait for this, a series of combining operations were conducted last July.

First, a field of Seneca wheat was combined with 15.7% moisture content. Two mornings later, Thorne wheat, with the same moisture, was combined. During the day the grain dried to 13.8%, but a rain caused it to go back up to 15.7%. At that percentage, combining was started at 8 a.m. the following day. If the storage bins had not been equipped for forced ventilation, the farmer would have had to wait until the wheat was dry enough for safe storage.

Special Bins . . . Since with forced ventilation it is necessary that the grain be in some housing so that air movement in relation to the grain can be controlled, the Connolly bins are equipped with inverted V-shaped air ducts. The frames are covered with ⅛ in. mesh hardware cloth and air is supplied by a main duct, fed by a 3-hp fan.

In northwestern Ohio, for the month of July, normal relative humidities at 1:30 p.m. and 7:30 p.m are 53% and 60% respectively. For winter wheat the equilibrium moisture content of the grain is 12% when in contact with 60% relative humidity air. Therefore, by operating the fan from 1 p.m. to 7:30 p.m. we could expect to dry the wheat to 12%.

On the 232 bushels of Seneca wheat combined at 15.7% the fan was operated intermittently for 29 hours over six days. A sample tested by local U. S. grain inspection people then showed moisture content had gone down to 12.1%.

The 488 bushels of Thorne wheat combined at 15.7% were placed in two other bins, which received ventilation for 23 hours over a span of five days.

The wheat in one bin was then down to 12.7% and in the other to 13.9%. Complete data is given in the accompanying table.

Findings Listed . . . Because of these tests we have come to the following conclusions:

1. Mechanical ventilation will enable the operator to harvest grain several days ahead of normal harvest time.

2. By such ventilation, grain can be harvested when the moisture in the kernel is going down, and the test weight of grain can still be maintained.

3. Total cost for ventilation, based on fixed and operating charges, will vary from 3 to 5¢ per bushel.

4. In areas of relatively high humidity, air at the rate of 3 to 5 cu. ft. per minute per bushel is satisfactory.

5. Relative length of the combining day can be increased.

6. Storage losses can be reduced to a minimum.

Forced Air Circulation Makes Wheat Safe for Farm Storage

	Bin Number		
	1	2	3
Date of Filling	July 7, 1952	July 9 & 10, 1952	July 9, 1952
Variety of Wheat	Seneca	Thorne	Thorne
Moisture Percentage	15.7	15.7	80 Bu. @ 13.8 200 Bu. @ 15.7
When Combined	.....	.....	
Number of Bushels	232	208	280
Depth of Filling	7′ 2″	6′ 6″	8′
Date Fan Started	July 8, 1952	July 9, 1952	July 9, 1952
Hours Operation	29	23	23
Percent Moisture Finish	12.1	12.7	13.9
Plenum Chamber S.P.	2.3 Inches	2.3 Inches	2.3 Inches
C.F.M. /Ft.² (Top of Grain)	14	17	14
K.W.H. /Bushel (Total all bins)	0.13		
Mean Temperature °F for Period of July 8 to 13, from 1:30 P.M. to 7:30 P.M. Each Day—84°			
Mean Percent R.H. for Same Period—40%			
* Test Weight of Grain	60.5	58.5	58.5
* U.S. Grade	1	2	2

* Test Weight and U.S. Grade established by U.S. authorities.

Automatic Load Scheduling...

. . . is desirable to achieve operating economy, joint Pennsylvania Electric Association committee meeting hears

Some form of automatic load scheduling between units within a station and between stations is desirable to approach reasonable operating economy, A. P. Hayward, Duquesne Light Co, told two Pennsylvania Electric Association committees recently. He added that losses resulting from use of either old or new units for regulation usually total more than the carrying costs of the programming equipment.

Hayward addressed an all-day symposium at the joint meeting of the Electrical Equipment and Relay Committees in Pittsburgh, Feb. 5-6.

Programming Started in 1932 . . . Duquesne Light started programming load in 1932. Subsequent system load additions injected swings and refinements were then added to provide automatic parallel operation of two plants. With the newest controls the schedules can be readjusted for vacuum conditions, coal costs or line loss compensation. Caution was advised in connection with old stoker-fired plants operating with steam headers because hunting or cycling can arise. Programmed scheduling spreads loads over several turbines and decreases amount of load change on any one.

When it becomes desirable to apply such equipment it is usually necessary to provide separate self-contained cubicles for it, said G. C. Spray in detailing the West Penn Power Co installation. Two stations are now equipped and in operation—Springdale (steam) and Lake Lynn (hydro). Studies are directed at expansion to include other stations. A double-throw control switch can select either automatic or manual response. High pressure modern boilers have proved better for steam regulation than stoker-fired units. Automatic controls for the stoker-fired units are under consideration and might include damper speed and drum level controls, Spray said.

Control at Hydro Plant . . . Program control for the hydro plant was based on maintaining gate positions to provide most efficient use of water even when increasing or decreasing station output. Response at Lake Lynn has been 8 to 10 Mw per minute. This value with 2 to 3 Mw per minute at Springdale has resulted in satisfactory tie-line control.

Tour Plants . . . The Electrical Equipment and Relay committees were guests of Allis-Chalmers Manufacturing Co at the six-plant transformer works in Pittsburgh. The group saw some of the 145 dry-type transformers of 10,000 kva 3-phase rating (forced air cooling) for the atomic energy program. At another point there was in process a new line of dry-type shipboard units for the Navy. To achieve compactness, shock-proofness and light weight, the 10 kva, 450-120 volt 60 cycle unit weighs only 142 lb compared with 200 for conventional designs. Reduction even to 40 lb for the same kva has been accomplished in experimental 400 cycle Class H designs.

PEA Unit Hears Report on Condensing Water

Peculiar facts about stratification of discharged condensing water were reported to the Pennsylvania Electric Association Hydraulic Power Committee, which met in Pittsburgh, Feb. 5-6, by E. T. Schuleen, Pennsylvania Water & Power Co.

Water taken at the pond bottom behind Pennsylvania W&P's Holtwood hydro dam is used for condensing purposes in the adjoining steam plant. The warm water formed a 10-ft layer at the surface with a 10-deg temperature differential. A floating boom of 10-ft depth was installed to counteract tendency toward recirculation of the warm water, Schuleen explained.

W. C. Bryson, Duquesne Light Co and also vice-chairman of the PEA engineering section, said the $2-billion reconstruction program for the triangle in Pittsburgh has already drawn merit in attracting good management talent into the industries of the area and thus holding the industries in the territory. Continuance of centralized operation of big productive corporations is viewed as a real contribution to the business community to say nothing of utility load stability.

Advance Plans . . .

. . . are needed for economical additions to utility plant, Restofski tells PEA group

"Don't underestimate future growth," said Harry Restofski, vice-president, West Penn Power Co. "The fire alarm basis for planning sacrifices economy quality of service and does great harm to the company." Restofski spoke at the recent meeting of the Pennsylvania Electric Association Transmission and Distribution Committee at Pittsburgh.

Citing 1947 company forecasts for 1960 of 90% saturation for electric refrigerators and 25% for water heaters, he said present achievements of 92% and 14%, respectively, indicate need to raise the forecasts. During the interim, 11,000 clothes dryers, and television in 40% of the homes have become important factors. Residential usage has passed 2,400 kwhr per year; this is ahead of schedule.

The residential market continues to grow, Restofski said, and the end is not in sight. Air conditioning, dishwashers, and electric house heating are growing, he noted. Housing contractors have been offered a $1,000 air-conditioning package with gas or oil for heating.

Long-range planning alone can give adequate time for sound engineering and economical construction. Failure to fight for necessary improvements is neglect of responsibility. Poor service makes good customer relations impossible, he continued, and encourages competition to enter the residential service field.

"The distribution engineer must be eternally vigilant," said C. T. Sinclair, chief engineer, Duquesne Light Co. Transmission and distribution plant, unlike generating stations where efficiency is built in by the equipment manufacturers, depends upon the distribution engineer's ingenuity for economy and efficiency.

Compare these Ground Rod Driving Costs...

ONE MAN

with a KEARNEY GROUND ROD DRIVER drives two rods faster than...

TWO MEN

can drive one rod with one pounding and the other holding.

YOU CAN SAVE up to 75% in installation costs when your crews work with the help of a KEARNEY GROUND ROD DRIVER. Actual field tests have shown that one man can drive two rods the KEARNEY way in less time than it takes two men to drive one rod with a sledge.

SEE how fast and simple it is to operate

1. Any length of rod is inserted through the hollow rod driver handle.
2. A heavy chuck grips the rod near the ground. It is moved up as the rod is driven.
3. Weight does most of the work as the worker drives the handle down onto the chuck. Worker remains in a safe, up-right position at all times.

SALVAGE old rods and save money. Simply reverse the above procedure to pull rod that is already in the ground.

Write today for Prices.

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Introducing...

A NEW LINE OF AIR CIRCUIT BREAKERS

THREE NEW BREAKERS have been added to the line of General Electric Type AK breakers. This means that the AK line can be secured in interrupting ratings from 15,000 to 100,000 amperes.

SELECTIVE OPERATION up to full interrupting rating is now provided by triple-characteristic tripping devices which open the breaker to isolate a fault.

STORED-ENERGY CLOSING MECHANISM in new breakers gives safer, positive closing even against fault conditions. Closing is accomplished by energy stored in a sturdy closing spring even if control power is lost.

MULTIPLE CONTACTS give faster arc extinction, longer contact life and reduced maintenance.

INTERCHANGEABLE PARTS between breakers greatly reduce parts stocking problems. The main physical difference between breakers is the number of contact fingers which increases with rating.

COMPLETE NEW LINE OF DRAWOUT EQUIPMENT having whatever circuit pattern required, can be manufactured for shorter shipments by using standard circuit breaker compartments.

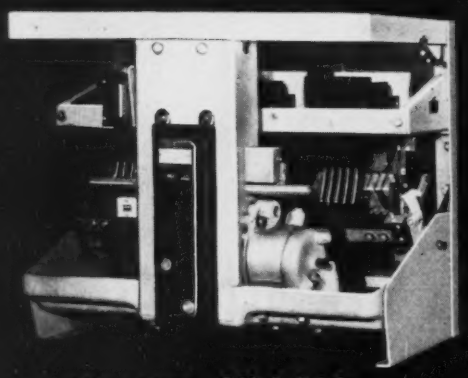
READILY ACCESSIBLE CURRENT TRANSFORMERS can be changed without disturbing bus connections.

INTEGRAL RACKING MECHANISM on removable unit cuts maintenance expenses.

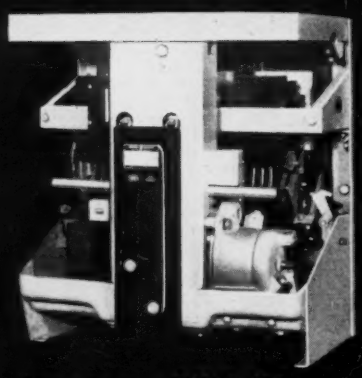
For full information, ask your local G-E sales representative for Bulletins GEA-5915 and GEA-5916 or write to General Electric Company, Schenectady 5, N. Y. 873-1

GENERAL ELECTRIC

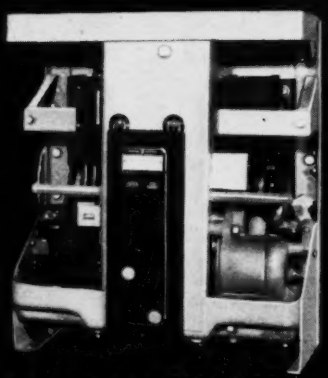
600 volts A-C 250 volts D-C



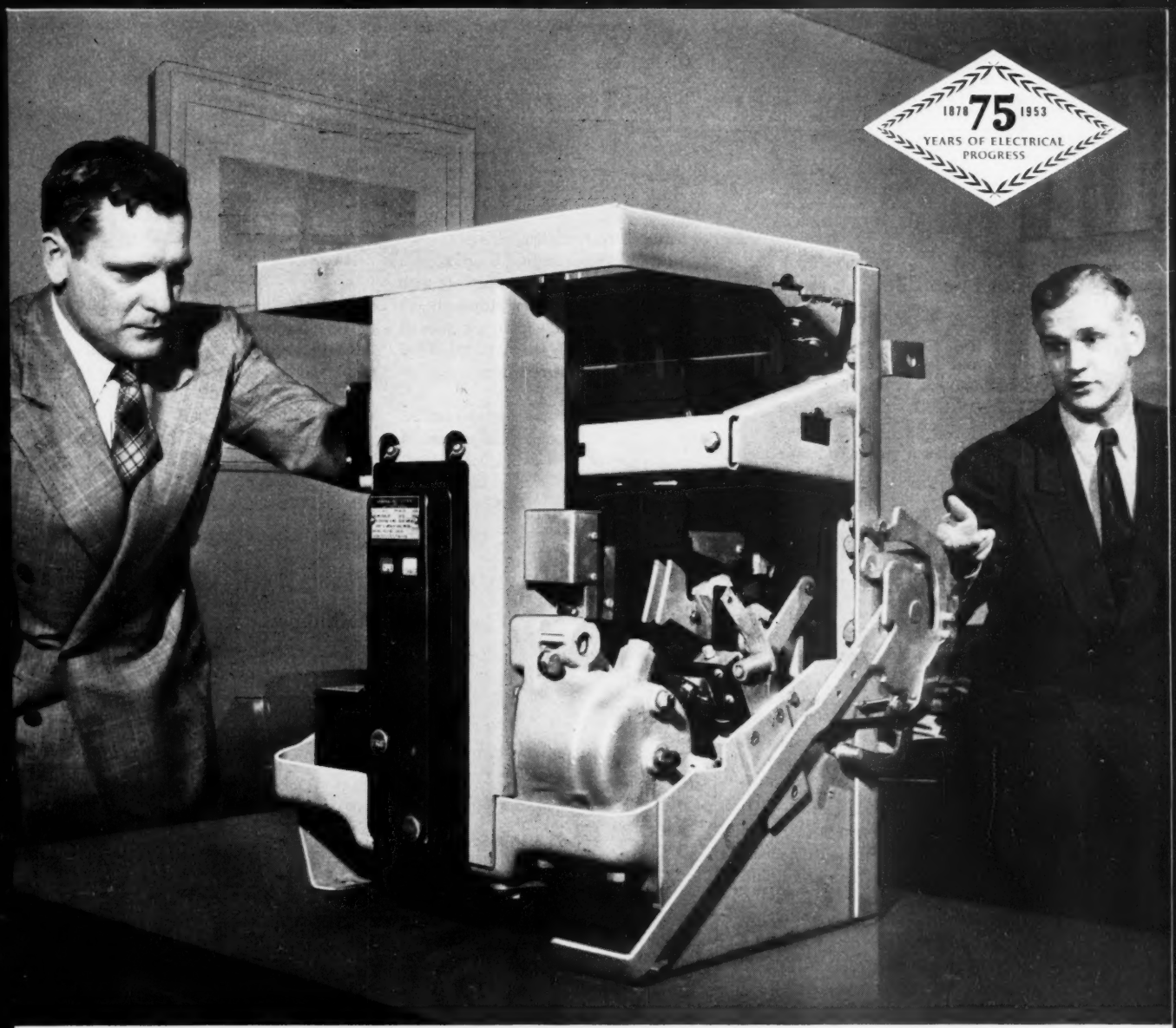
New Type **AK-1-100**
Rated: 4000 amps
100,000 amps interrupting



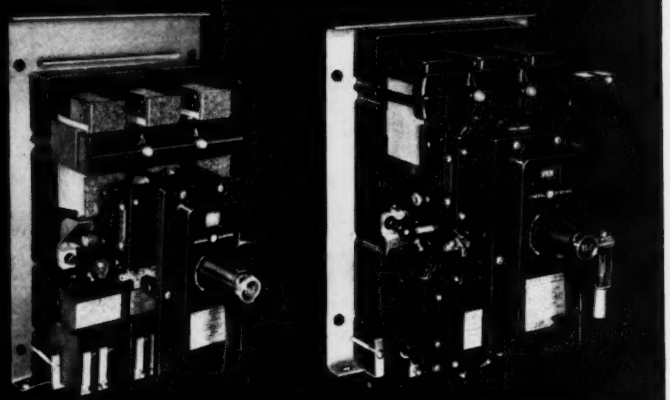
New Type **AK-1-75**
Rated: 3000 amps
75,000 amps interrupting



New Type **AK-1-50**
Rated: 1600 amps
50,000 amps interrupting



NOW, FOR THE FIRST TIME 30-cycle momentary ratings equal to full interrupting ratings permit selective operation under all conditions.



AK-1-25 and AK-1-15 Breakers, introduced in 1948, complete the line with ratings of 600 and 225 amps, interrupting ratings of 25,000 and 15,000 amps.

New line of drawout enclosures, designed for AK breakers. Now, for the first time, a line of breakers specifically designed for drawout equipments.

Higher Wages . . .

. . . is one of the major goals set up by AFL executive council at Miami Beach meeting

Higher wages this year is one of the major goals which the executive council of American Federation of Labor decided upon at its Miami Beach meeting recently. The council said it will call upon all its affiliated unions to press for higher wages in order to head off a major depression in 1954 or 1955.

In a documented report titled "Wages and Future Economic Stability," the AFL showed that productivity from 1949 through 1952 went up 13.2% "for the whole private economy" but that the factory wage level, measured in constant dollars advanced only 7%.

Seeks T-H Changes . . . The AFL executive council has announced that it will fight for "major changes" in the Taft-Hartley labor law.

Some of these changes are:

- The right to engage in some secondary boycotts, such as those involving struck work, where one union working for one employer and having no dispute with him, refuses to handle goods produced in the struck plant of a second employer. The Taft-Hartley act forbids all secondary boycotts.
- A virtual closed shop for some unions, such as the building trades, whose work is often of an intermittent nature.
- Elimination of the requirement that union officers sign anti-Communist affidavits before their unions can use the facilities of the National Labor Relations Board.
- Permission for economic strikers to vote in representation elections.
- Deletion from the act of the 80-day injunction provision for use in national emergency strikes.

Ending of Wage Controls May Bring Labor Pirating

Now that wages have been decontrolled, employers will face threat of losing individual key employees through labor pirating from companies offering more pay, particularly in those positions where there is a shortage.

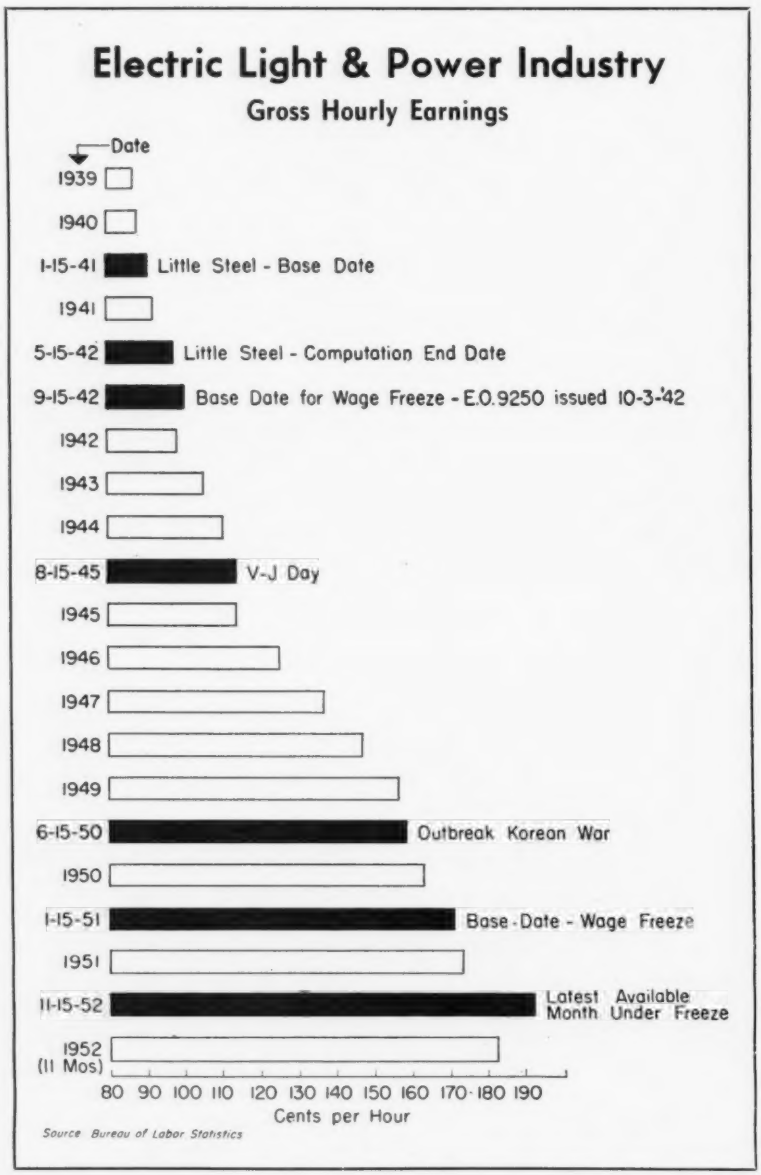
There are still shortages of electrical engineers, linemen, and power station operators and electricians.

The U. S. Bureau of Employment Security keeps an inventory of job openings which state employment offices can't fill and which are placed "in clearance" with the national office to try to fill them from other parts of the country.

On the list in January were unfilled openings for 1,261 electrical engineers (an increase of 256 over December), 850 electricians (a drop of 46), 79 power station operators (an increase of 7) and 89 linemen and servicemen (a drop of 104).

•

In order to combat the skilled manpower shortage, General Electric Co has asked more than 5,000 draftsmen employed by the company to strip the frills from their drawings, thereby saving from 20 to 50% of the time normally required to prepare drawings.



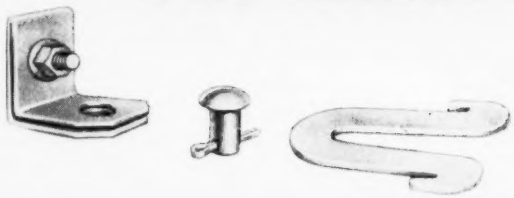
rupting ratings of 25,000 and 15,000 amps.

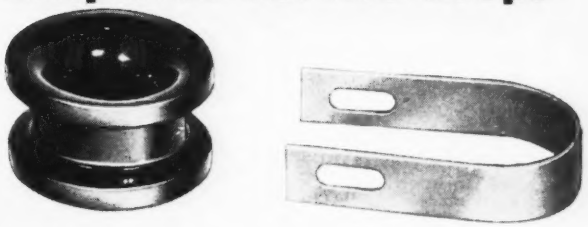
specifically designed for

LINE CONSTRUCTION BLUEPRINTS

HOW SOME UTILITIES ARE MAKING CONSTRUCTION WORK EASIER . . .
IN WAYS THAT MAY BE HELPFUL AND USEFUL TO YOU.

L-M's Versatile Take-Off Insulator Simplifies Service Drops

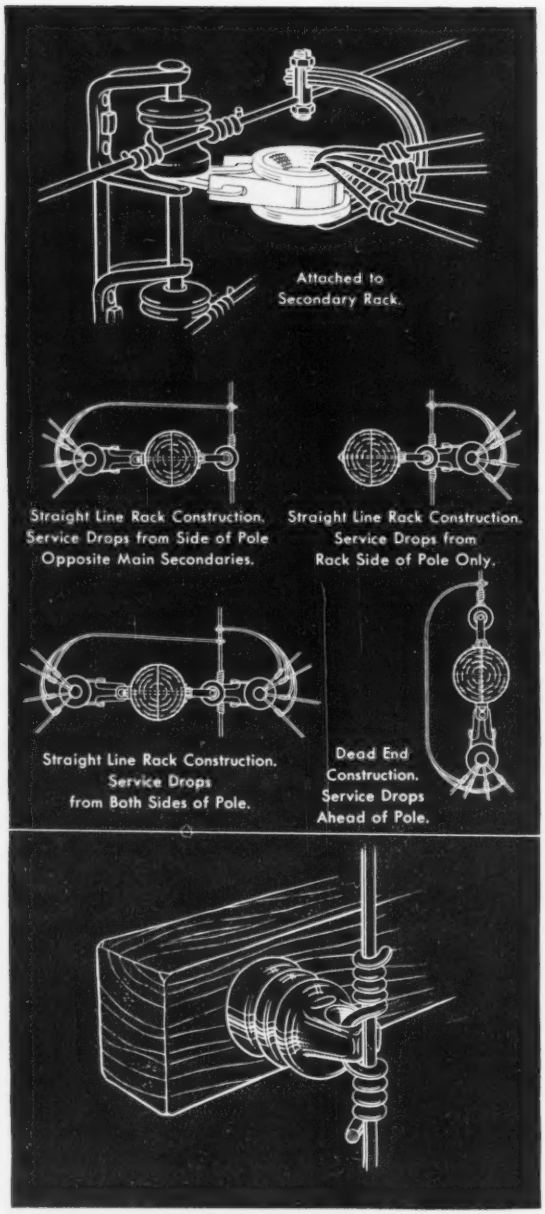




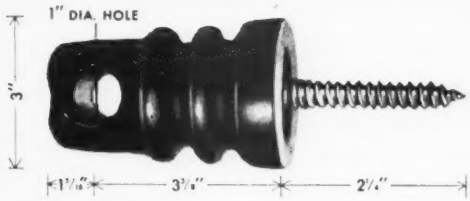
With the L-M Take-Off Insulator, it's much easier to install service drops. The Take-Off eliminates overloading of secondary rack spools and tangled connections. May be attached to secondary racks or directly to the pole. Simplifies installing, replacing, removing, or changing service drops; simplifies the operation when main conductors are replaced.

Easily used on either old or new construction. On old construction the yoke is just slipped under the rack spool, band is placed around insulator and snapped onto the yoke. Then service wires are transferred to the porcelain ring. Blueprints at left and below show some suggested uses.

Steel parts are heavily galvanized. Wet-process porcelain insulator has a 4″ outside diameter with a 1½″ diameter center opening. Available for pole or rack mounting; pole face attachment and insulator available separately. Ask the L-M Field Engineer for a sample.


Attached to Secondary Rack.
Straight Line Rack Construction. Service Drops from Side of Pole Opposite Main Secondaries.
Straight Line Rack Construction. Service Drops from Rack Side of Pole Only.
Straight Line Rack Construction. Service Drops from Both Sides of Pole.
Dead End Construction. Service Drops Ahead of Pole.

L-M INSULATED PRIMARY LEAD BRACKET



A variety of applications. Many utilities find it particularly useful on crossarms to train primary and series street lighting leads. Wet-process brown glazed porcelain insulator 4 11/16″ long, 3″ diameter, with 2¼″ No. 22 galvanized-steel wood screw.

Many L-M Construction Materials to Help Solve Your Problems

L-M offers a wide variety of Line Construction Materials and Specialties to help simplify your construction jobs. Ask the L-M Field Engineer for literature; or write Line Material Company. Explain your problem and we'll be glad to make suggestions. Line Material Company, Milwaukee 1, Wisconsin (a McGraw Electric Company Division).

LINE MATERIAL

Line Construction Materials

FINANCIAL

Listing Per Share Earnings

All 12 analysts say report income on common shares outstanding at end of a period, six would like it on average number

MARJORIE H. CRUTHERS, Irving Trust Co, Wall Street, New York

Earnings-per-share is a figure used by security analysts in valuing a stock through a comparison with past performance and an estimation of future prospects. The term represents the total income available for common stockholders divided by the actual number of shares outstanding at the end of an earnings period.

Distorted Picture . . . However, as utilities have financed a good proportion of their construction by repeated sales of common stock, the simple earnings-per-share figure may give a distorted picture. So in recent years the practice has grown of calculating earnings-per-share on the average number of shares outstanding during an earnings period. Purpose is to cushion the diluting effect of the added stock.

The question of the average number of shares outstanding seems rather simple, but actually it is handled in many different ways both within the industry and financial circles. As earnings-per-share is of such basic importance to financial people, 12 utility analysts* were surveyed to determine their views on averaging the number of shares. The results were published by the Irving Trust Co in the fourth of its series of Information Bulletins which may be secured from Public Utility Department, Irving Trust Co, 1 Wall Street, New York 15, N. Y.

Common Outstanding at End-of-Period . . . The analysts stated they are primarily interested in earnings that are available for each share of common outstanding at end of the earnings period. Some analysts also like to have earnings-per-share shown on the average number of shares, and they also want to see the number of shares on which this figure is based. Because there are various methods of figuring average number of shares it would be well to show the method used.

A company usually sells stock to provide funds for expanding or improving its plant and equipment, where, in time, the investment is expected to generate earnings to support this additional stock. But there is a time element between sale of the stock and realization of income. If earnings presently available for common are divided by the total shares outstanding, that is, shares previously outstanding plus the new shares, earnings will be burdened by all of the new shares before the new equipment is able to produce income. If instead the new shares are added gradually on an average basis, the company will be given an opportunity to put new money to work and gradually improve its earnings before the full effect of added stock is felt.

Earnings Lag . . . Theoretically to compensate accurately for lag in earnings after new common is sold, additional shares should be added at the same time and to the same extent that the money invested in property produces earnings. For this reason any arithmetic method of averaging is only an approximation.

There are many situations under which a simple averaging will not give a true picture of earnings. For example, if a company sells debt securities first or uses a bank loan in anticipation of common stock financing, there may be some earnings already available from properties built with less costly bond money or bank loan.

Another factor is "interest during construction." Some analysts have contended that if earnings-per-average share is used then "interest during construction" should be excluded. For this item is meant to help compensate for the cost of money during the expansion period.

This does not necessarily follow as "interest during construction" is taken into the income statement only after money is invested in the plant and not as soon as the security is sold.

Average Number of Shares . . . Methods of averaging shares may be summarized as follows: Add together the actual number of shares outstanding at end of each division of earnings period and divide by the number of divisions in the earnings period.

As stated above, any averaging gives very approximate results. So there seems to be little advantage of considering an average on a daily basis. On the other hand any period longer than a quarter of a year would have little value. Two practical methods of figuring earnings-per-average-share are on a **monthly** and a **quarterly basis.** The first distributes new shares more evenly over the income period. Latter method coordinates the averaging with the dividend payment.

On the **monthly basis** the average number of shares is calculated by adding the actual number of shares outstanding at end of each month and dividing by the number of months in the earnings period. For example, assume a company with 12,000 shares outstanding sold an additional 1,200 in November, with a closing date of financing Nov. 10. Then in calculating the average number of shares for the full year ended Dec. 31 you would total ten months when 12,000 shares were outstanding and two months of 13,200 and divide by 12 giving 12,200 as an average for the year.

Outstanding New Common . . . New shares are considered to be outstanding on the day the company receives the money for the new stock. In using the **monthly basis** there is the question of when to start including the new shares. If the sale is in the first half of the month, all agree that shares should be included that month. If it is towards the end, it is argued that it will be the next month before the money can be put to work. For practical purposes new shares may well be considered to be outstanding at the end of the month irrespective of which day during the month they are sold.

On the **quarterly basis** the average number of shares is calculated by adding the actual number of shares outstanding at the end of each quarter in the earnings period and dividing by the number of quarters in the earnings

*Analysts surveyed were: Marvin Chandler, Paul Donnan, Owen Ely, Titus Fowler, James Hurd, W. Truslow Hyde, Theron Locke, George Nye, Hugh Pastoriza, Lawrence Ryan, Charles Tatham, and Longley Walker.

period. The principle for using the **quarterly basis** is to express earnings per share on the number of shares which are entitled to earnings and dividends during the period.

Therefore, new shares are considered to be outstanding as of the first record date on which dividends will be paid on the new stock. This method assumes dividends are paid quarterly. In this way if the new stock is sold after the dividend record date but before the end of the quarter the new stock would not be included in the average number of shares until the next quarter.

Monthly and Quarterly Results . . . To compare the results of the **monthly basis and quarterly basis** use the same figures as in the first example. Assume a company with 12,000 shares outstanding sold an additional 1,200 shares in November with a closing date of the financing Nov. 10, record date of Nov. 15.

Then in calculating the average number of shares for the full year ended Dec. 31, you would total three quarters when 12,000 shares were outstanding and one quarter of 13,200 shares and divide by four giving 12,300 as the average for the year.

As a result of using the **quarterly basis** the dividend rate multiplied by the average number of shares will be equal to total dividend payment charged to surplus during the period. This does not hold true if there has been a change in dividend rate during this period. And as will be seen below if there is a stock split or stock dividend, additional stock would have to be averaged in to maintain the advantage of the **quarterly basis,** which is not consistent with good analytical technique.

When reporting earnings for less than a full 12-month period, it is of little value to the analyst to show earnings on average number of shares.

Other Factors . . . A convertible issue presents a problem. For consistency it would seem to be right to average the shares converted as though they were a new issue of common stock. In this way a heavy conversion would not create too large a dilution in earnings. However, the convertible security has probably been outstanding for some time and the money will have been put to work and producing income. For this reason it might be contended that all the stock converted during the earnings period should be added at once rather than averaged.

Another problem is a stock dividend or a stock split. There seems to be little justification from the point of view of the analyst, for averaging these shares. No new property is added by a stock dividend or split. So, earnings-per-share should be adjusted immediately for the full effect of additional shares without averaging.

Conclusion . . . All the analysts surveyed first want earnings-per-share reported on actual number of shares outstanding at end of an earnings period. In addition half of these would also like to see earnings-per-share on basis of average number of shares.

They seem to prefer the monthly basis for figuring average number of shares as this appears to be a more accurate one and creates the least disturbance throughout the income period. In any event if earnings-per-average-share is used, analysts would like to have it noted in financial statements showing number of shares on which figures are based and method used to arrive at these figures.

Today in Utility Finance

YIELDS (%)

Quality	Bonds			Preferred Stocks			Common Stocks		
	1st	2nd	3rd	1st	2nd	3rd	1st	2nd	3rd
DATE 1953									
Feb. 19	**3.09**	**3.16**	**3.23**	**4.14**	**4.30**	**4.59**	**5.01**	**5.35**	**5.73**
Feb. 11	3.08	3.13	3.21	4.14	4.29	4.60	4.97	5.33	5.72
END OF QTR:									
4th 1952	2.99	3.03	3.14	4.06	4.22	4.59	4.98	5.33	5.62
3rd 1952	2.99	3.03	3.16	4.10	4.26	4.61	5.18	5.59	5.96
2nd 1952	2.95	3.00	3.09	4.05	4.31	4.60	5.38	5.85	6.42
1st 1952	2.95	2.99	3.13	4.11	4.29	4.66	5.35	6.03	6.47

Data: Reis & Chandler, Inc.

EARNINGS

Company	Period Months Ended		Net Income		Earnings Per Common Share	
			1953	**1952**	**1953**	**1952**
Carolina Power & Light	12	Jan.	$7,217,575	$6,306,733	$...	$...
Central Illinois Light	12	Jan.	3,061,827	3,055,919	2.84(c)	2.86(c)
Minnesota Power & Light	12	Jan.	3,411,837	3,328,944	3.30	3.20
New York State Electric & Gas	12	Jan.	7,585,197	6,406,636	2.42(a)	2.23(a)
Ohio Edison	12	Jan.	16,477,258	13,975,897	2.99(c)	2.68(c)
			1952	**1951**	**1952**	**1951**
Cincinnati Gas & Electric	12	Dec.	$10,057,798	$9,943,713	$2.80(b)	$2.90(b)
Detroit Edison Co	12	Dec.	17,196,307	15,419,725	1.77(c)	1.78(c)
Niagara Hudson Power	12	Dec.	23,131,877	20,721,186	1.92	2.05

Notes—Figures shown for the last three companies have been audited.
(a) Based on 2,696,950 shares in 1953 and 2,396,950 shares in 1952; (b) Based on 3,202,500 shares in 1952 and 3,050,000 shares in 1951; and (c) On average number of shares outstanding.

FINANCING

Company and Description	Amount of Offering (000)	Offering Price	Yield to Public
SCHEDULE FOR MARCH			
Bonds			**Bid Date**
Indianapolis Power & Light—1st mtg	$10,000	.....	Mar. 3
Fall River Electric Light—1st mtg due 1983	6,800	.....	Mar. 9
Narragansett Electric—1st mtg. due 1983	10,000	.....	Mar. 10
Central Maine Power—1st general mtg due 1983	10,000	.....	Mar. 10
Lake Superior District Power—1st mtg due 1983	2,000	.....	Mar. 17
Public Service Co of Oklahoma—1st mtg	6,000	.....	Mar. 17
Mississippi Power & Light—1st mtg due 1983	12,000	.....	Mar. 17
Georgia Power— 1st mtg due 1983	16,000	.....	Mar. 24
Dallas Power & Light—1st mtg due 1983	9,000	.....	Mar. 24
Preferred Stock			
New England Power—80,140 sh $100 par (to be first offered to holders of outstanding 6% pfd on share-for-share basis about March 3 to March 23)	$8,014	.....	Mar. 3
Public Service Co of New Mexico—30,000 sh $100 par	3,000	.....	Mar. 17*
Georgia Power—100,000 sh no par	.....	.....	Mar. 24
Common Stock			
California Electric Power—136,249 sh	.....	.....	Mar. 31
Lake Superior District Power—29,761 sh (to be offered common-holders on 1-for-9 basis record Feb. 25 to expire Mar. 23; Robert W. Baird & Co underwriters)	.....	.....	.....
Arizona Public Service—378,000 sh	.....	.....	.....#
Public Service Electric & Gas—750,000 sh	.....	.....	Mar. 18##

Notes—*To be offered by Allen & Co., underwriters. #It is expected to be offered during the week of Mar. 9 by First Boston-Blyth & Co group, underwriters. ##Morgan Stanley & Co group will probably offer the stock.

Rugged?

This Westinghouse transformer survived a fall . . . undamaged!

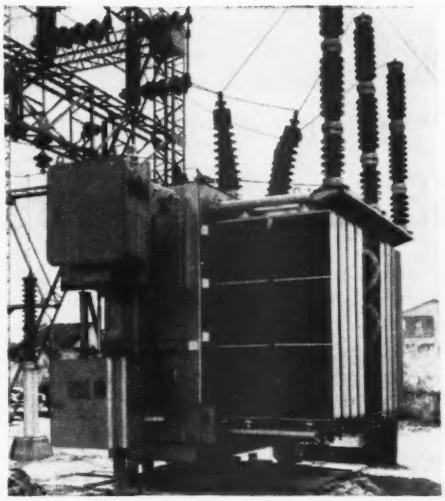
Yes—it does happen. A good example is the case of a large 22,500/30,000-kva power transformer which accidentally slipped, during unloading, from a freight car and crashed to the ground. Although the tank was extensively battered, inspection indicated there was absolutely no damage to the vital parts. After field test, it was installed and put into service. It's been giving a southern utility trouble-free service ever since.

Accidents of this type prove the superiority of Westinghouse Form-Fit power transformer design which assures safe delivery of built-in quality. Shell-form construction with Form-Fit tank results in superior mechanical ruggedness. One reason is that the core surrounds, supports and protects the coils, giving them added strength . . . both mechanically and electrically.

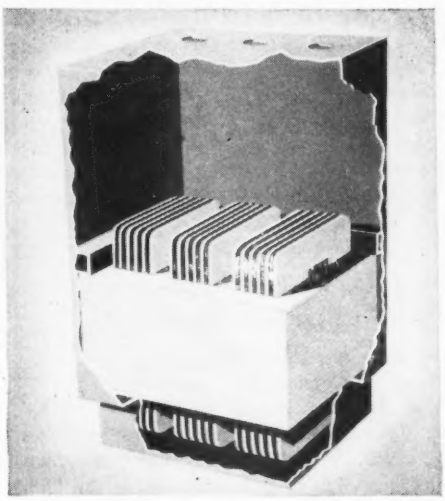
There are other advantages to Westinghouse Form-Fit design, too, which result in long term advantages to you. On the average, Form-Fit transformers are 20% lighter and utilize 15% less foundation area . . . making available substantial savings in installation time and expense.

It's a proved fact that Westinghouse transformers offer greater dependability at reduced costs under all operating conditions. Call your Westinghouse representative. He'll be glad to discuss the application of these transformers to your specific problems. Also available at your request is bulletin B-4142A. Write for it at Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-70670



In service. A side view shows the 22,500/30,000-kva transformer in service after surviving a fall during unloading.

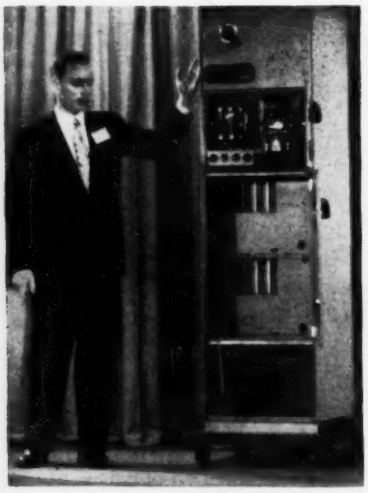


Reason for ruggedness. This core-coil design is the big reason why this Westinghouse Form-Fit transformer reached the site intact. Core surrounds, supports and protects the coils.

YOU CAN BE SURE...IF IT'S

Westinghouse

Showmanship plus entertainment plus . . .



Information help . . .

GE to Inspire Its Distributors

Showmanship and entertainment which have been used for years by manufacturers of consumers goods to put sparkle into their sales conferences are now being used by a manufacturer of industrial and electrical equipment. On Feb. 16 at Hershey, Pa., General Electric Co kicked off its first presentation of "The Time of Your Life."

This show is intended to bring to what GE calls its intermediate sales force the information it needs to assure the company of its share of the electrical apparatus market. The presentation is built around the many items of industrial and power distribution equipment made by the company, their markets, applications, and selling features.

Optimistic premise around which the show centers is that "as much electrical equipment will be purchased in the next ten years as has been produced in the past 75."

To present the show the company has set up two (eastern and western) troupes composed of professional entertainers, product engineers, sales promotion experts, and apparatus sales management. Before the shows close they will have travelled 30,000 miles in 30 states and will have presented 28 two-day and 5 one-day shows. Over 4,000 salesmen of General Electric Supply Co, Graybar Electric Co, and other distributors will have attended.

Top level entertainment is woven through the entire series of product and sales presentations by high calibre Broadway and Hollywood talent. For lesser roles local models are employed.

Girls in bathing suits, ventriloquists, top-hatted lecturers, combined with the latest methods of visual presentation keep the salesmen on the alert during the four sessions of the two-day meetings.

The eastern troupe has appeared at Hershey and is now at Atlanta. As now planned its other performances will be at Cincinnati, March 9-12; Chicago, March 16-21; Detroit, March 24-28; Rye, N. Y., April 6-11; and Boston, April 14-18.

The western troupe has presented shows at Kansas City and Dallas. Its remaining schedule includes: Los Angeles, March 9-12; San Francisco, March 16-20; Seattle, March 25-30; and Denver, April 7-8.

Company personnel presents product information and gives the training.

Federal Plans Purchase of Pacific Electric Stock

Federal Electric Products Co, Newark, N. J., has taken an option to purchase the outstanding stock of Pacific Electric Manufacturing Corp, San Francisco. The West Coast firm manufactures high voltage equipment.

This acquisition by Federal Electric is a part of its expansion program in circuit breakers, indoor and outdoor switchgear, and power switching equipment. Following the acquisition of Pacific Electric, it is planned that many additional products will be manufactured by Federal Electric.

MANUFACTURING BRIEFS

Production of primary aluminum in the United States during 1952 hit an all-time peak. Yearly output reached a total of 1,874,642,692 lb, 34 million lb above the previous peak established in 1943. The new record was 12% greater than 1951 figures when 1,673,758,854 lb were produced. December's production of 166,817,178 lb was 22 million lb greater than the 144,907,819 lb produced in December, 1951.

Sylvania Electric Products, Inc, is engaged in developing new types of materials for use in atomic reactors at its Hicksville, N. Y., plant. The Hicksville project is aimed at developing materials that will enable atomic reactors to operate at higher power levels, which would be important in

BREAKING THE BARRIER OF PRESENT TRANSMISSION VOLTAGE

America's first 330-kv line employs O-B insulators and hardware

Breaking through the barrier of present high voltage transmission practice, American Gas and Electric Corp. has completed the initial 61-mile section of America's first 330-kv interconnecting trunk line, ultimately to span from the coal deposits of the Appalachian area to the Lower Great Lake district. To be built by the operating subsidiaries of A. G. & E., this important project links a series of large generating plants with heavy load centers through the industrial heart of America.

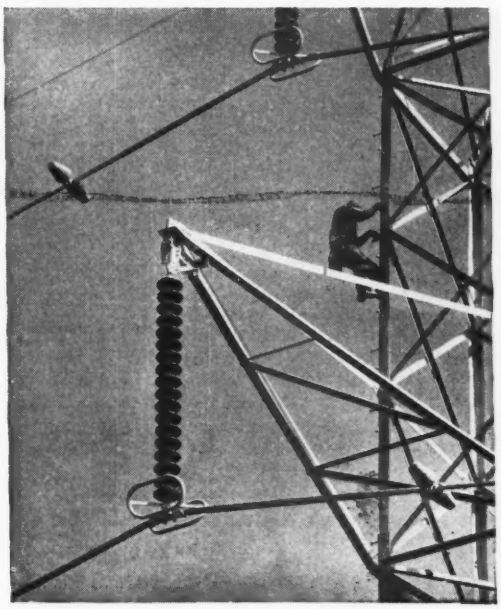
O-B takes pride in supplying large quantities of standard 15,000-pound and 25,000-pound units for suspension and deadend strings, Cooline non-magnetic conductor clamps, and corona shields on this history-making development.

Ohio Brass

MANSFIELD • OHIO

4226-H

Completed tangent support on the first section of A. G. & E.'s new 330-kv transmission line. It is of interest that the insulator string shown supporting the 1.6-inch ACSR conductor is of standard O-B design; and the suspension clamp is the conventional O-B Cooline pattern. Adherence to service-tested components and practices is highly noteworthy in a new project of this size and voltage.



the operation of a nuclear reactor for the production of electric power.

United States Rubber Co has signed a conditional purchase contract for approximately 80 acres of land in Emerson, N. J. The company plans to create a new research center devoted to basic research in the fields of rubber, chemicals, synthetics, textiles, and plastics. Construction is expected to begin this year and the center will open with an initial employment of about 125 persons.

Multi-Clean Products, Inc, St. Paul, Minn., has completed negotiations to buy the manufacturing facilities of General Electric Co's industrial vacuum cleaner department. Multi-Clean is building a new factory in St. Paul for production of its industrial vacuum cleaners, which will be distributed by the company under a new trade name.

SALES ASSIGNMENTS

COMPANY STAFFS

Pyramid Instrument Co, Inc, Lynbrook, N. Y., manufacturer of Amprobe snap-around volt-ammeters, has named Bernard M. Egrin to the newly created post of regional sales manager. Egrin, formerly with Pyrene Manufacturing Co, will work in the field with Amprobe field sales representatives and wholesale distributors.

Oliver Iron & Steel Corp's Pole Line Hardware Division has appointed Roy T. Falkenberg as south Texas district representative with headquarters in Houston, Tex. He will work out of the Dallas office under the supervision of G. M. Daly, Southern sales manager of the firm's division in Birmingham, Ala.

REPRESENTATIVES

Electrical Engineers Equipment Co, Melrose Park, Ill., has appointed Colorado Western Sales Co, 501 Broadway, Denver, as its representative in Colorado and Wyoming.

National Electric Products Corp, Pittsburgh, has named Southeastern Sales Co, P. O. Box 263, Savannah, Ga., as a representative to handle NEPCO's line of television equipment. Paul Hayden, Southeastern's representative, will handle the NEPCO line in North and South Carolina, Georgia, Florida, Alabama, and Mississippi.

MEETINGS CALENDAR

Public Utilities Advertising Association
Region 1, Parker House Hotel, Boston, March 4-5; Region 5, Jefferson Hotel, Richmond, Va., March 12-13; National Convention, Chase Hotel, St. Louis, May 7-8.

Pacific Coast Electrical Association
Engineering-Operating Section Conference, Long Beach, Calif., March 5-6; Administrative Services Section Conference, Phoenix, Ariz., April 8-9; Annual Convention, Hoberg's, Lake County, Calif., May 13-15.

North Central Electric Association
Electrical Industries Meet, Hotel Nicollet, Minneapolis, March 8-11; Accounting Conference, Dyckman Hotel, Minneapolis, March 23-24; Accident Prevention Committee, Dyckman Hotel, Minneapolis, April 21; Distribution-Equipment Engineering Meeting, Dyckman Hotel, Minneapolis, April 22; South Dakota All-Electrical Industry Meeting, Ward Hotel, Aberdeen, S. D., April 24-25.

North Central Electrical Industries
1953 Electrical Industry Convention, Hotel Nicollet, Minneapolis, March 8-11.

National Association of Purchasing Agents
Public Utility Buyers Group, Mid-Winter Conference, Hotel Roosevelt, New Orleans, March 9-10; Annual Meeting, Statler Hotel, Los Angeles, May 24-27.

National Electrical Manufacturers Association
Winter Conference, Edgewater Beach Hotel, Chicago, March 9-12; Annual Meeting, Haddon Hall, Atlantic City, N. J., Nov. 9-12.

National Association of Corrosion Engineers
1953 Conference-Exhibition, Sherman Hotel, Chicago, March 16-20.

***Illuminating Engineering Society**
Canadian Regional Conference, Chateau Laurier, Ottawa, Ont., March 23-25; Southwestern Regional Meeting, Hotel Baker, Dallas, Tex., April 12-14; Pacific Northwest Regional Conference, Multnomah Hotel, Portland, Ore., April 23-24; East Central Regional Conference, Hotel Lord Baltimore, Baltimore, Md., May 14-15; Southern Regional Conference, Sedgefield Inn, Greensboro, N. C., May 18-19; Great Lakes Regional Conference, Syracuse Hotel, Syracuse, N. Y., May 25-26; National Technical Conference, Hotel Commodore, New York, Sept. 14-18.

A&M College of Texas
Conference for Protective Relay Engineers, Dept. of Electrical Engineering, College Station, Tex., March 23-25.

Southeastern Electric Exchange
20th Annual Conference, Boca Raton Hotel, Boca Raton, Fla., March 23-25; Engineering-Operation Section, Edgewater Gulf Hotel, Edgewater Park, Miss., April 16-17; Industrial Power Sales Conference, Fort Sumter Hotel, Charleston, S. C., May 21-22.

Institute of Radio Engineers
National Convention-Exhibit, Waldorf-Astoria Hotel and Grand Central Palace, New York, March 23-26.

American Power Conference
Annual Meeting, Sherman Hotel, Chicago, March 25-27.

Edison Electric Institute
19th Annual Sales Conference, Edgewater Beach Hotel, Chicago, March 30-April 2; Accident Prevention Committee, Edgewater Beach Hotel, Chicago, May 4-5; Transmission-Distribution Committee, Edgewater Beach Hotel, Chicago, May 5-6; Electrical Equipment Committee, Sir Walter Hotel, Raleigh, N. C., May 11-12; Meter-Service Committee, Wentworth-by-the-Sea, Portsmouth, N. H., May 25-27; 21st Annual Convention, Atlantic City, N. J., June 1-4.

Missouri Valley Electric Association
Engineering Conference, President Hotel, Kansas City, Mo., April 8-10.

Northwest Electric Light & Power Association
Engineering-Operation Section, Multnoman Hotel, Portland, Ore., April 8-10; Business Development Section, Davenport Hotel, Spokane, Wash., May 4-6.

Northwest Public Power Association
Engineering-Operation Section, Osbourn Hotel, Eugene, Ore., April 16-17; Annual Convention, Ridpath Hotel, Spokane, Wash., May 6-8; Accounting Section, Monticello Hotel, Longview, Wash., Sept. 17-18.

Electric-Gas Utility Accountants
National Conference, Sherman Hotel, Chicago, April 20-22.

American Institute of Electrical Engineers
Southern District Meeting, Hotel Seelbach, Louisville, Ky., April 22-24; Northeastern District Meeting, Copley Plaza Hotel, Boston, April 29-May 1; Summer General Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 15-19; Pacific General Meeting, Hotel Vancouver, Vancouver, B. C., Sept. 1-4.

Pennsylvania Electric Association
Spring Meeting, Meter Committee, Hotel Alexander, Hagerstown, Md., April 23-24.

Rocky Mountain Electrical League
Annual Spring Conference, Shirley Savoy Hotel, Denver, Colo., April 26-28.

***American Society of Mechanical Engineers**
Spring Meeting, Deshler-Wallick Hotel, Columbus, Ohio, April 28-30; Semi-Annual Meeting, Statler Hotel, Los Angeles, June 28-July 2; Fall Meeting, Sheraton Hotel, Rochester, N. Y., Oct. 5-7; Annual Meeting, Statler Hotel, New York, Nov. 29-Dec. 4.

Chicago Electrical Industry Show
Sponsored by Electric Association and Electrical Maintenance Engineers of Chicago, Conrad Hilton Hotel, Chicago, May 11-14.

Third International Congress on Electro-Thermics
Paris, France, May 18-23.

Electrical Manufacturers' Representatives Association of Michigan, Inc.
1953 Electrical Exhibition, State Fair Grounds, Exhibition Bldg., Detroit, May 19-22.

National Association of Electrical Distributors
45th Annual Convention, Conrad Hilton Hotel, Chicago, May 24-29; Spring Meeting, Pacific Zone, Huntington Hotel, Pasadena, Calif., June 8-10.

California Municipal Utilities Association
Annual Conference, Clift Hotel, San Francisco, June 9-12.

American Welding Society
Exposition held in conjunction with National Spring Technical Meeting, Shamrock Hotel, Houston, Tex., June 16-19.

Canadian Electrical Association
Annual Convention, Manoir Richelieu, Murray Bay, Que., June 25-27.

American Society for Testing Materials
Annual Meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 29-July 3.

***International Association of Electrical Leagues**
18th Conference, Fairmount Hotel, San Francisco, Aug. 5-8.

Instrument Society of America
8th National Instrument Exhibit, Sherman Hotel, Chicago, Sept. 21-25.

***Addition this week.**

MANUFACTURERS' EARNINGS

Company	Period Months Ended		Net Income 1952	Net Income 1951	Earnings Per Common Share 1952	Earnings Per Common Share 1951
Electric Controller & Mfg (a)	12	Dec.	$1,312,938	$1,593,141	$6.17	$7.49
Libbey-Owens-Ford Glass (b)	12	Dec.	14,907,893	15,476,754	2.88	3.01
National Supply (b)	12	Dec.	9,559,231	10,933,308	6.20	7.13

Notes—(a) These figures have been audited; (b) Preliminary statement.

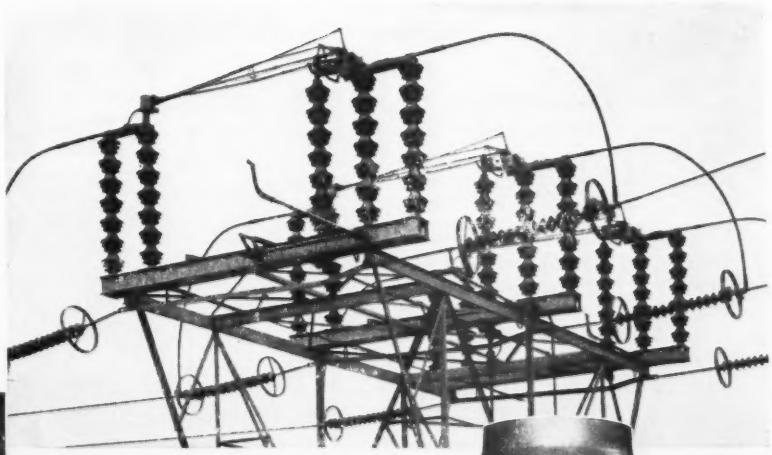
NO. 10 IN A SERIES

A SUB STATION DESIGN ENGINEER ASKS—

"we're interested in higher voltage switch and bus unit operation. Do you have a service record on 220 KV?"

HERE'S OUR ANSWER:

Yes sir! For example, these Pinco 735 units installed at 220 KV by a large eastern utility back in 1929. Operating conditions have been rugged, but these insulators in seven unit stacks have given *twenty-four years of continuous, trouble-free performance* . . . stacks of evidence that Pinco 735's are right *for* the job . . . right *on* the job!



(Right) Rugged porcelain—a balanced design with larger second and center shells—the extra strength and extreme accuracy of assembly . . . all contribute to the trouble-free performance of Pinco 735 switch and bus units.

(Left) Here's a close-up of one of our master jigs in which the 735 unit is assembled. This operation assures exact bolt hole alignment—also cap and pin mounting surfaces are within 3/10,000 of an inch of parallelism.

See Pages 112 to 123 in Pinco Catalog No. 49 for complete electrical and mechanical specifications covering all Pinco Switch and Bus Insulators. Do you have a copy? If not, write us.

The Porcelain Insulator Corporation
LIMA, NEW YORK

Sales Agents: JOSLYN MFG. & SUPPLY CO.
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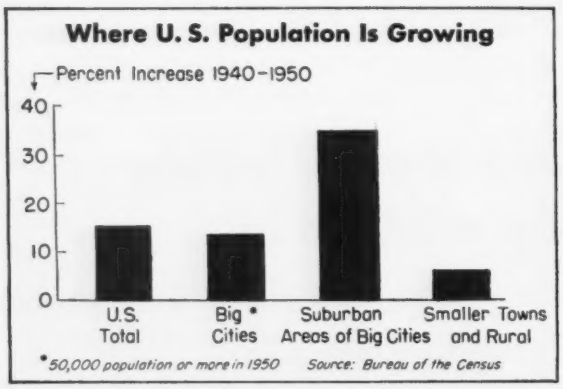
PINCO INSULATORS

RIGHT ON THE JOB—

ELECTRICAL BUSINESS OUTLOOK



Suburbs Grow and Grow

Not in large cities but in areas about them and smaller cities is the growth market

Suburbs of large cities will provide an increasing share of residential and commercial electric sales over the next few years, if recent population trends continue. Population in these areas is growing almost 2½ times as fast as total population according to the 1950 Census.

Most of the 1940-1950 population growth in the U. S. came in or near large cities. They picked up 15.2 million out of the total 19 million increase. The rise in big cities and suburbs was about 22%, compared to 14.5% for the U. S. By 1950, 56% of Americans lived in "standard metropolitan areas"—cities of 50,000 or more, plus the neighboring counties that are economically tied up with the large central cities. In 1940, only about 52.5% of the people lived in these areas.

Key facts for pinpointing future markets for residential and commercial power sales show up in the breakdown of the figures.

1. Cities in general are not growing nearly so fast as their neighboring areas. Population in cities of 50,000 or more increased only 13.9%, in areas immediately around them 35.6%. Almost half the total growth in U. S. population came in areas around—but not in—these cities.

2. The metropolitan cities are growing but much more slowly than their surrounding areas. Chicago population went up only 6.6% while the number of people living near Chicago went up fully 31%.

Slower growth of population in larger cities indicates that future increases in residential sales there are likely to be small compared to sales in the suburbs. The same is true for sales of power to commercial customers other than office buildings. Retail stores are increasingly locating where the customers are—in the suburbs.

3. Small cities are growing faster than those with more than 100,000 population. And many of these smaller cities are still growing faster than their suburbs. Thus, growth in residential and commercial sales of power may continue to favor the small cities as opposed to their suburbs for some time. But if the national pattern is maintained, the suburbs will pull ahead as the cities get larger.

4. Southern cities in general are still growing faster than their suburbs. There are exceptions. New Orleans, for instance, grew 15% while its surrounding area almost doubled in population. But Raleigh is more typical. Its population increased by 40% while the surrounding areas gained only 13%.

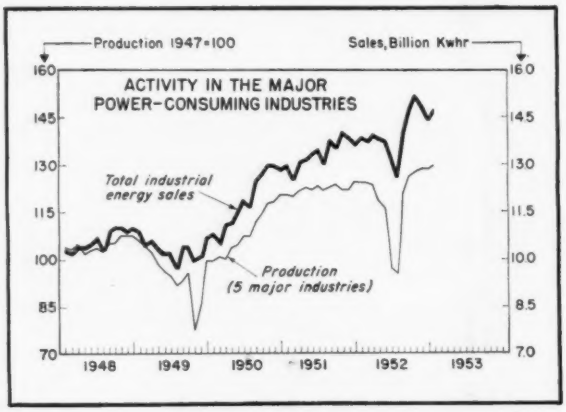
There's reason to believe Southern cities will stay ahead of their suburbs for some time. The big shift of population from farms and rural areas to the cities is a relatively recent development in the South. Farm population dropped 27% in the South between 1940 and 1950, largest decline in any region. If the South follows the pattern set by the rest of the country, her cities will go on growing fastest for a while. Suburbs will gain later.

5. In general, the fastest growing metropolitan areas—including both cities and suburbs—are in the South and Far West. So the largest gains in urban construction and in urban electric power sales for residential and commercial users may come in those areas.

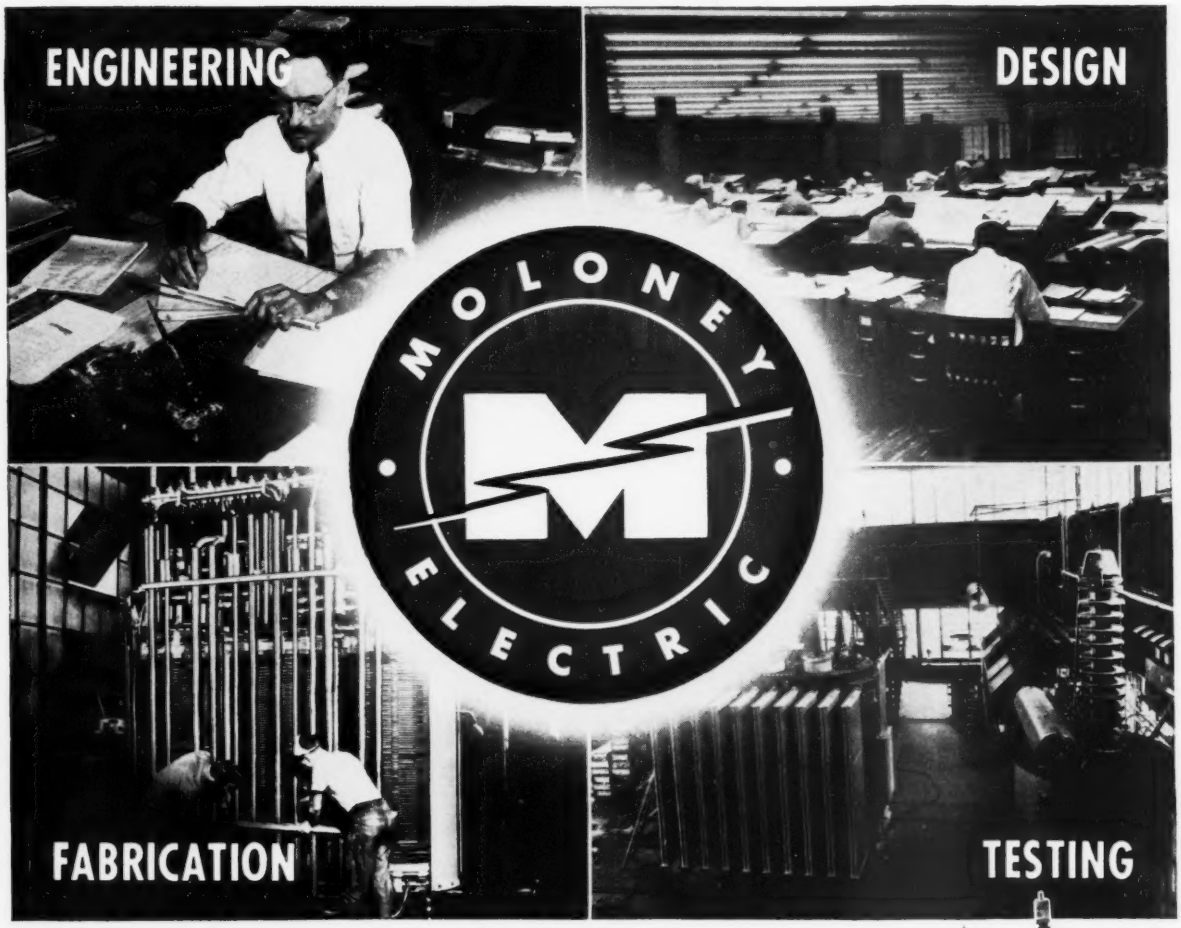
Where does all this leave the large cities? Can they be expected to provide growing markets for residential and commercial power in the future? Certainly they can. In the first place they are still growing: Chicago, New York, and Philadelphia picked up 5%-7% more people between 1940 and 1950. Detroit gained about 14%, and Los Angeles gained 31%. Their suburbs just grew faster.

In the second place, these cities are still the economic centers of their metropolitan areas. Any increase in population in their areas—even in the suburbs—is likely to increase the amount of business being done by trade and industry in the central cities.

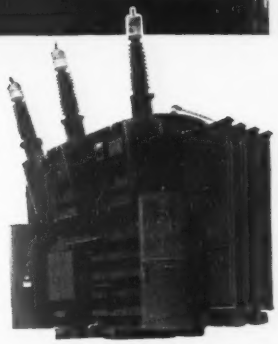
But the slower growth of the cities does indicate that future increases in electrical energy sales there must increasingly come from higher per capita use of electricity rather than increases in the number of customers.



for *Power Transformers* of *Superior Performance*



WHEN you specify **Moloney Power Transformers** you are specifying *"superior performance."* For over 50 years Moloney has been accumulating experience, skill and facilities to make this possible. You will know beforehand that from your Moloney Transformer, which can be test-proved on our 3,600,000 volt Surge Generator, you can expect *better* performance, *greater* reliability and *less* maintenance expense. MEPP-2



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SALES OFFICES IN ALL PRINCIPAL CITIES • FACTORIES AT ST. LOUIS, MO. AND TORONTO, ONT., CANADA

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SPEED DELIVERY OF 5/8% STEP VOLTAGE REGULATORS

ALLIS-CHALMERS
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Allis-Chalmers 5/8% step voltage regulators have proved their economy and reliability in over twenty years of operation.

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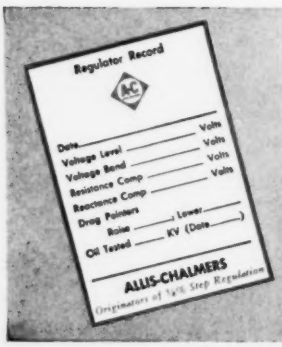
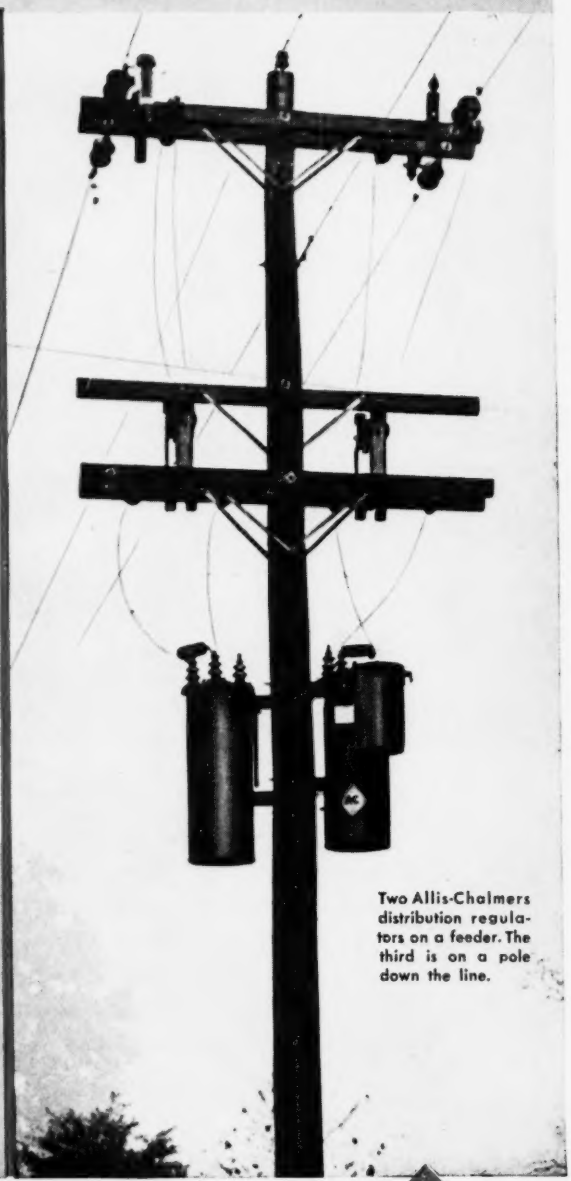


FREE
Maintenance Stickers

You can keep a handy, on-the-spot record of control settings with these adhesive-backed stickers. They provide a convenient service record for all types of regulators. Write on them either with pen or pencil.



Two Allis-Chalmers distribution regulators on a feeder. The third is on a pole down the line.

ALLIS-CHALMERS

A-C ALLIS-CHALMERS

Originators of 5/8% Step Regulation